



ELSEVIER

Animal Feed Science and Technology 69 (1997) 353–372

ANIMAL FEED  
SCIENCE AND  
TECHNOLOGY

## Author Index, Volumes 63–69 \*

- Abate, A., *see* Mbuthia, E.W. et al.  
Abodabos, A., *see* Al Jassim, R.A.M. et al.  
Acamovic, T., *see* Salawu, M.B. et al.  
Acamovic, T., *see* Salawu, M.B. et al.  
Acamovic, T., *see* Salawu, M.B. et al.  
Acciaioli, A., *see* Franci, O. et al.  
Aderibigbe, A.O., C.O.L.E. Johnson, H.P.S. Makkar, K. Becker and N. Foidl  
Chemical composition and effect of heat on organic matter- and nitrogen-degradability  
and some antinutritional components of *Jatropha* meal . . . . . 67 (1997) 223  
Adinew, K., *see* Odenyo, A.A. et al.  
Agnew, R.E., *see* Park, R.S. et al.  
Aguilar, C., *see* Chilibroste, P. et al.  
Aharoni, Y., *see* Holzer, Z. et al.  
Aichinger, F., *see* Zollitsch, W. et al.  
Ajakaiye, A., J.O. Atteh and S. Leeson  
Effects of calcium source, particle size and time on in-vitro calcium solubility of some  
indigenous Nigerian mineral ingredients for poultry diets . . . . . 65 (1997) 293  
Akin, D.E., W.H. Morrison III, L.L. Rigsby, G.R. Gamble, A. Sethuraman and K.-E.L.  
Eriksson  
Biological delignification of plant components by the white rot fungi *Ceriporiopsis*  
*subvermispora* and *Cyathus stercoreus* . . . . . 63 (1996) 305  
Al-Dehneh, A., J.T. Huber, R. Wanderley, C.B. Theurer, M. Pessarakli and D. DeYoung  
Incorporation of recycled urea-N into ruminal bacteria flowing to the small intestine of  
dairy cows fed a high-grain or high-forage diet . . . . . 68 (1997) 327  
Al-Saiady, M.Y., *see* Attia, F.M. et al.  
Alawa, J.P., *see* Kallah, Muh.S. et al.  
Alawa, J.P., *see* Lakpini, C.A.M. et al.  
Aldrich, J.M., L.A. Holden, L.D. Muller and G.A. Varga  
Rumen availabilities of nonstructural carbohydrate and protein estimated from in situ  
incubation of ingredients versus diets . . . . . 63 (1996) 257  
Alemán, T., *see* Nahed, J. et al.  
Al Jassim, R.A.M., F.T. Awadeh and A. Abodabos  
Supplementary feeding value of urea-treated olive cake when fed to growing Awassi  
lambs . . . . . 64 (1997) 287  
Alsobayel, A.A., *see* Attia, F.M. et al.

\* It is usual journal policy to include yearly Author and Subject Indexes in the last issue of the announced publication schedule, but that for technical reasons this was omitted from Vol 68. For this reason, the present indexes cover Vols 63–69.

- Ammerman, C.B., *see* Henry, P.R. et al.  
 Ammerman, C.B., *see* Sandoval, M. et al.  
 Andersen, L.M., *see* Prawirodigo, S. et al.  
 Andrighetto, I., *see* Cozzi, G. et al.  
 Angulo, E., J. Brufau and E. Esteve-Garcia  
     Effect of a sepiolite product on pellet durability in pig diets differing in particle size and  
     in broiler starter and finisher diets . . . . . 63 (1996) 25  
 Antongiovanni, M., *see* Franci, O. et al.  
 Archimède, H., *see* Schmidely, Ph. et al.  
 Arosemena, A., *see* DePeters, E.J. et al.  
 Ashbell, G., *see* Silva, A.G. et al.  
 Ashes, J.R., *see* Gulati, S.K. et al.  
 Ashes, J.R., *see* Gulati, S.K. et al.  
 Astigarraga, L., *see* Peyraud, J.L. et al.  
 Attah, J.O., *see* Ajakaiye, A. et al.  
 Attia, F.M., A.A. Alsobayel, M.S. Kriadees, M.Y. Al-Saiady and M.S. Bayoumi  
     Nutrient composition and feeding value of *Salicornia bigelovii* torr meal in broiler diets . . . . . 65 (1997) 257  
 Aumaitre, A., *see* Comizzoli, P. et al.  
 Aumaitre, A., *see* Lizardo, R. et al.  
 Avondo, M., *see* Licitra, G. et al.  
 Awadeh, F.T., *see* Al Jassim, R.A.M. et al.  
 Baas, T.C., *see* Thacker, P.A. et al.  
 Baba, M., *see* Kallah, Muh.S. et al.  
 Babatunde, G.M., *see* Onifade, A.A. et al.  
 Babidis, V., *see* Christaki, E. et al.  
 Bach Knudsen, K.E.  
     Carbohydrate and lignin contents of plant materials used in animal feeding . . . . . 67 (1997) 319  
 Bach Knudsen, K.E., *see* Canibe, N. et al.  
 Bach Knudsen, K.E., *see* Gdala, J. et al.  
 Bae, H.D., T.A. McAllister, E.G. Kokko, F.L. Leggett, L.J. Yanke, K.D. Jakober, J.K. Ha,  
 H.T. Shin and K.-J. Cheng  
     Effect of silica on the colonization of rice straw by ruminal bacteria . . . . . 65 (1997) 165  
 Baker, R.T.M.  
     The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish  
     muscle . . . . . 65 (1997) 35  
 Balcells, J., *see* Martín-Orúe, S.M. et al.  
 Ballet, N., J.M. Besle and C. Demarquilly  
     Effect of ammonia and urea treatments on digestibility and nitrogen content of dehy-  
     drated lucerne . . . . . 67 (1997) 69  
 Balogun, B.I., *see* Lakpini, C.A.M. et al.  
 Baloyi, J.J., N.T. Ngongoni, J.H. Topps and P. Ndlovu  
     Chemical composition and degradability of *Brachystegia spiciformis* (musasa) leaves  
     and stems harvested over 4 months from three sites in Zimbabwe . . . . . 69 (1997) 179  
 Bárcena-Gama, J.R., *see* Miranda, R.L.A. et al.  
 Bárcena-Gama, J.R., *see* Roa V., M.L. et al.  
 Barej, W., *see* Puchala, R. et al.  
 Barnes, R.J., *see* Park, R.S. et al.  
 Barresi, S., *see* Licitra, G. et al.  
 Barrière, Y., *see* Tovar-Gómez, M.R. et al.  
 Barton, D., *see* Porter, M.G. et al.  
 Bas, P., *see* Schmidely, Ph. et al.  
 Batterham, E.S., *see* Prawirodigo, S. et al.  
 Bayoumi, M.S., *see* Attia, F.M. et al.  
 Becker, K., *see* Aderibigbe, A.O. et al.

- Becker, K., *see* Blümmel, M. et al.
- Becker, K., *see* Makkar, H.P.S. et al.
- Becker, K., *see* Makkar, H.P.S. et al.
- Belibasakis, N.G. and D. Tsigogianni  
Effects of niacin on milk yield, milk composition, and blood components of dairy cows  
in hot weather . . . . . 64 (1996) 53
- Ben-Ghedalia, D., *see* Miron, J. et al.
- Ben Salem, H., A. Nefzaoui, L. Ben Salem and J.L. Tisserand  
Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed  
lucerne hay-based diets. . . . . 68 (1997) 101
- Ben Salem, L., *see* Ben Salem, H. et al.
- Berardo, N., B.H. Dzowela, L. Hove and M. Odoardi  
Near infrared calibration of chemical constituents of *Cajanus cajan* (pigeon pea) used as  
forage. . . . . 69 (1997) 201
- Bernal-Santos, G., P.J. Van Soest, C.J. Sniffen and M.L. Thonney  
Evaluation of praseodymium as a liquid marker in rumen turnover studies . . . . . 63 (1996) 201
- Bertin, G., *see* Giger-Reverdin, S. et al.
- Berzaghi, P., *see* Cozzi, G. et al.
- Besle, J.M., *see* Ballet, N. et al.
- Bezault, N., *see* Giger-Reverdin, S. et al.
- Blas, E., *see* Fernández-Carmona, J. et al.
- Blümmel, M., H.P.S. Makkar, G. Chisanga, J. Mtumuni and K. Becker  
The prediction of dry matter intake of temperate and tropical roughages from in vitro  
digestibility/gas-production data, and the dry matter intake and in vitro digestibility  
of African roughages in relation to ruminant liveweight gain. . . . . 69 (1997) 131
- Blümmel, M., *see* Makkar, H.P.S. et al.
- Böhme, H., *see* Flachowsky, G. et al.
- Boisen, S. and J.A. Fernández  
Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro  
analyses. . . . . 68 (1997) 277
- Bonsi, M.L.K., A.K. Tuah, P.O. Osuji, V.I. Nsahla and N.N. Umunna  
The effect of protein supplement source or supply pattern on the intake, digestibility,  
rumen kinetics, nitrogen utilisation and growth of Ethiopian Menz sheep fed teff  
straw . . . . . 64 (1996) 11
- Bosch, M.W., *see* Van der Poel, A.F.B. et al.
- Boucué, Ch.V., *see* De Boever, J.L. et al.
- Brosh, A., *see* Holzer, Z. et al.
- Brown, D.L., *see* Wright, J.B. et al.
- Brownlee, A.G., *see* Faichney, G.J. et al.
- Brufau, J., *see* Angulo, E. et al.
- Bruni, R., *see* Franci, O. et al.
- Bryden, W.L., *see* Ravindran, V. et al.
- Buraczewska, L., *see* Gdala, J. et al.
- Butler, L.G., *see* Wheeler, R.A. et al.
- Byers, E.B., *see* Gulati, S.K. et al.
- Byers, F.M., *see* Gandi, J. et al.
- Byers, Y.G., *see* Gulati, S.K. et al.
- Calsamiglia, S., *see* Howie, S.A. et al.
- Canibe, N. and B.O. Eggum  
Digestibility of dried and toasted peas in pigs. 2. Ileal and total tract digestibilities of  
amino acids, protein and other nutrients . . . . . 64 (1997) 311
- Canibe, N. and K.E. Bach Knudsen  
Digestibility of dried and toasted peas in pigs. 1. Ileal and total tract digestibilities of  
carbohydrates. . . . . 64 (1997) 293

- Carabaño, R., W. Motta-Ferreira, J.C. De Blas and M.J. Fraga  
 Substitution of sugarbeet pulp for alfalfa hay in diets for growing rabbits . . . . . 65 (1997) 249
- Carmona, J., *see* Nahed, J. et al.
- Carpino, S., *see* Licitra, G. et al.
- Castañón, J.I.R., M.P. Flores and D. Pettersson  
 Mode of degradation of non-starch polysaccharides by feed enzyme preparations . . . . . 68 (1997) 361
- Castrillo, C., *see* Martín-Orúe, S.M. et al.
- Cervera, C., *see* Fernández-Carmona, J. et al.
- Chaney, W.R., *see* Wheeler, R.A. et al.
- Chang, S., *see* Gandi, J. et al.
- Chapoutot, P. and D. Sauvant  
 Nutritive value of raw and extruded pea-rapeseed blends for ruminants . . . . . 65 (1997) 59
- Chen, K.-J., *see* Chiou, P.W.-S. et al.
- Chen, K.-L., *see* Wen-shyng Chiou, P. et al.
- Chen, X.B., *see* Chikunya, S. et al.
- Cheng, K.-J., *see* Bae, H.D. et al.
- Chigwada, W., *see* Galbraith, H. et al.
- Chikunya, S., C.J. Newbold, L. Rode, X.B. Chen and R.J. Wallace  
 Influence of dietary rumen-degradable protein on bacterial growth in the rumen of sheep receiving different energy sources . . . . . 63 (1996) 333
- Chilibroste, P., C. Aguilar and F. García  
 Nutritional evaluation of diets. Simulation model of digestion and passage of nutrients through the rumen-reticulum . . . . . 68 (1997) 259
- Chiou, P.W.-S., B. Yu, S.-S. Wu and K.-J. Chen  
 Effect of dietary protein source on performances and rumen characteristics of dairy cows . . . . . 68 (1997) 339
- Chisanga, G., *see* Blümmel, M. et al.
- Christaki, E., V. Babidis, P. Florou-Paneri, D. Kufidis and A.B. Spais  
 Effect of the dietary inclusion of the growth promoter avoparcin on the performance and carcass characteristics of growing quail . . . . . 65 (1997) 287
- Christensen, D.A., *see* Mustafa, A.F. et al.
- Chriyaa, A., K.J. Moore and S.S. Waller  
 Browse foliage and annual legume pods as supplements to wheat straw for sheep . . . . . 66 (1997) 85
- Chriyaa, A., K.J. Moore and S.S. Waller  
 Intake, digestion, and nitrogen balance of sheep fed shrub foliage and medic pods as a supplement to wheat straw . . . . . 65 (1997) 183
- Cid, J.M., *see* Madrid, J. et al.
- Cid, J.M., *see* Madrid, J. et al.
- Cobos, P.M.A., *see* Miranda, R.L.A. et al.
- Coleman, S.W., *see* Dabo, S.M. et al.
- Comizzoli, P., J. Peiniau, C. Dutertre, P. Planquette and A. Aumaitre  
 Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana . . . . . 64 (1997) 215
- Cone, J.W., A.H. Van Gelder and F. Driehuis  
 Description of gas production profiles with a three-phasic model . . . . . 66 (1997) 31
- Cone, J.W., *see* Groot, J.C.J. et al.
- Corley, R.N., A. Woldegebriel and M.R. Murphy  
 Evaluation of the nutritive value of kudzu (*Pueraria lobata*) as a feed for ruminants . . . 68 (1997) 183
- Cottyn, B.G., *see* De Boever, J.L. et al.
- Cousins, R.J., *see* Sandoval, M. et al.
- Cozzi, G., P. Berzaghi, F. Gottardo, G. Gabai and I. Andrighetto  
 Effects of feeding propylene glycol to mid-lactating dairy cows . . . . . 64 (1996) 43
- Crawshaw, R., *see* Rooke, J.A. et al.



- Dabo, S.M., C.M. Taliaferro and S.W. Coleman  
Anatomical and histological factors affecting the ruminal degradation of stem tissues in  
*Bothriochloa* species . . . . . 67 (1997) 299
- Dalzell, S.A. and H.M. Shelton  
Methods of field preservation and selection of sample tissue for condensed tannin  
analysis in *Leucaena* species . . . . . 68 (1997) 353
- Dapoza, C., *see* Marín-Orúe, S.M. et al.
- Dass, R.S., *see* Toppo, S. et al.
- Dawson, L.E.R. and C.S. Mayne  
The effect of infusion of putrescine and gamma amino butyric acid on the intake of  
steers offered grass silage containing three levels of lactic acid . . . . . 66 (1997) 15
- Dawson, L.E.R. and C.S. Mayne  
The effect of intraruminal infusions of amines and gamma amino butyric acid on rumen  
fermentation parameters and food intake of steers offered grass silage . . . . . 63 (1996) 35
- Dawson, L.E.R. and R.W.J. Steen  
The effect of spreading sodium bicarbonate over the surface of grass silage on the intake  
of grass silages by beef cattle . . . . . 67 (1997) 61
- Deville, E.R., *see* Givens, D.I. et al.
- Debersaques, F.M.A., *see* Groot, J.C.J. et al.
- Deb Hovell, F.D., *see* Manyuchi, B. et al.
- De Blas, J.C., *see* Carabaño, R. et al.
- De Boever, J.L., B.G. Cottyn, D.L. De Brabander, J.M. Vanacker and Ch.V. Bouqué  
Prediction of the feeding value of maize silages by chemical parameters, in vitro  
digestibility and NIRS . . . . . 66 (1997) 211
- De Brabander, D.L., *see* De Boever, J.L. et al.
- De Groote, G. and G. Huyghebaert  
The bio-availability of phosphorus from feed phosphates for broilers as influenced by  
bio-assay method, dietary Ca-level and feed form . . . . . 69 (1997) 329
- Delaby, L., *see* Delagarde, R. et al.
- Delagarde, R., J.L. Peyraud and L. Delaby  
The effect of nitrogen fertilization level and protein supplementation on herbage intake,  
feeding behaviour and digestion in grazing dairy cows . . . . . 66 (1997) 165
- Demarquilly, C., *see* Ballet, N. et al.
- Demeyer, D.I., *see* Mbanzamihigo, L. et al.
- Dent, J.B., *see* Herrero, M. et al.
- DePeters, E.J., J.G. Fadel and A. Arosemena  
Digestion kinetics of neutral detergent fiber and chemical composition within some  
selected by-product feedstuffs . . . . . 67 (1997) 127
- De Queiroz, A.C., *see* Vieira, R.A.M. et al.
- De Queiroz, A.C., *see* Vieira, R.A.M. et al.
- DeYoung, D., *see* Al-Dehneh, A. et al.
- Djouvinov, D., D. Pavlov, A. Ilchev and E. Enev  
Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil  
by-products as roughages for sheep feeding . . . . . 68 (1997) 287
- D'Mello, J.P.F. and A.M.C. Macdonald  
Mycotoxins . . . . . 69 (1997) 155
- Dominguez Bello, M.G. and A. Escobar  
Rumen manipulation for the improved utilization of tropical forages . . . . . 69 (1997) 91
- Donawa, A.A., *see* Lallo, C.H.O. et al.
- Doré, J., *see* Faichney, G.J. et al.
- Driehuis, F., *see* Cone, J.W. et al.
- Dunshea, F.R., *see* Prawirodigo, S. et al.
- Dutertre, C., *see* Comizzoli, P. et al.

- Dzowela, B.H., L. Hove, B.V. Maasdorp and P.L. Mafongoya  
Recent work on the establishment, production and utilization of multipurpose trees as a  
feed resource in Zimbabwe . . . . . 69 (1997) 1
- Dzowela, B.H., *see* Berardo, N. et al.
- Eggum, B.O., *see* Canibe, N. et al.
- Elizalde, J.C., F.J. Santini and A.M. Pasinato  
The effect of stage of harvest on the process of digestion in cattle fed winter oats  
indoors. II. Nitrogen digestion and microbial protein synthesis . . . . . 63 (1996) 245
- Ellis, W.C., *see* Ramirez Piñeres, M.A. et al.
- Ellis, W.C., *see* Ramirez Piñeres, M.A. et al.
- Emanuelson, M., *see* Gonda, H.L. et al.
- Emile, J.C., *see* Tovar-Gómez, M.R. et al.
- Enev, E., *see* Djouvinov, D. et al.
- Eriksson, K.-E.L., *see* Akin, D.E. et al.
- Escobar, A., *see* Dominguez Bello, M.G. et al.
- Esteve-Garcia, E., *see* Angulo, E. et al.
- Faddy, M.J., *see* Kennedy, P.M. et al.
- Fadel, J.G., *see* DePeters, E.J. et al.
- Faichney, G.J., C. Poncet, B. Lassalas, J.P. Jouany, L. Millet, J. Doré and A.G. Brownlee  
Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and  
bacteria to nitrogen in rumen and duodenal digesta in sheep . . . . . 64 (1997) 193
- Farrell, D.J., *see* Prawirodigidjo, S. et al.
- Faverdin, P., *see* Peyraud, J.L. et al.
- Fawcett, R.H., *see* Herrero, M. et al.
- Fernández-Carmona, J., C. Cervera and E. Blas  
Prediction of the energy value of rabbit feeds varying widely in fibre content . . . . . 64 (1996) 61
- Fernández, J.A., *see* Boisen, S. et al.
- Ferrara, R., *see* Miranda, R.L.A. et al.
- Ferrer, A., *see* Gandi, J. et al.
- Flachowsky, G., F. Schöne, G. Schaarmann, F. Lübke and H. Böhme  
Influence of oilseeds in combination with vitamin E supplementation in the diet on  
backfat quality of pigs . . . . . 64 (1997) 91
- Flores, M.P., *see* Castañón, J.I.R. et al.
- Florou-Paneri, P., *see* Christaki, E. et al.
- Foidl, N., *see* Aderibigbe, A.O. et al.
- Foltyn, J., *see* Komprda, T. et al.
- Fontenot, J.P., *see* Rogers, M. et al.
- Foulkes, G.R., *see* Wilman, D. et al.
- Foulkes, G.R., *see* Wilman, D. et al.
- Fraga, M.J., *see* Carabaño, R. et al.
- Franci, O., M. Antongiovanni, A. Acciaioli, R. Bruni and A. Martini  
Response surface analyses of the associative effects of lucerne hay, wheat straw and  
maize gluten feed on growing lambs . . . . . 67 (1997) 279
- Fransen, H.M.P., *see* Van der Poel, A.F.B. et al.
- František, J., *see* Komprda, T. et al.
- Gabai, G., *see* Cozzi, G. et al.
- Gachuiri, C.K., *see* Mbutia, E.W. et al.
- Galbraith, H., W. Chigwada, J.R. Scaife and W.R. Humphries  
The effect of dietary molybdenum supplementation on tissue copper concentrations,  
mohair fibre and carcass characteristics of growing Angora goats . . . . . 67 (1997) 83
- Galloway, Sr., D.L., *see* Goetsch, A.L. et al.
- Gamble, G.R., *see* Akin, D.E. et al.
- Gandi, J., M.T. Holtzapple, A. Ferrer, F.M. Byers, N.D. Turner, M. Nagwani and S. Chang  
Lime treatment of agricultural residues to improve rumen digestibility . . . . . 68 (1997) 195

- García-Ciudad, A., A. Ruano-Ramos, B.R. Vázquez de Aldana and B. García-Criado  
Interannual variations of nutrient concentrations in botanical fractions from extensively  
managed grasslands ..... 66 (1997) 257
- García-Criado, B., *see* García-Ciudad, A. et al.
- García, F., *see* Chilibraste, P. et al.
- García B., C., *see* Roa V., M.L. et al.
- Gdala, J., A.J.M. Jansman, L. Buraczewska, J. Huisman and P. Van Leeuwen  
The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed  
carbohydrates and dietary protein in young pigs ..... 67 (1997) 115
- Gdala, J., H.N. Johansen, K.E. Bach Knudsen, I.H. Knap, P. Wagner and O.B. Jørgensen  
The digestibility of carbohydrates, protein and fat in the small and large intestine of  
piglets fed non-supplemented and enzyme supplemented diets ..... 65 (1997) 15
- Giger-Reverdin, S., N. Bezault, D. Sauvant and G. Bertin  
Effects of a probiotic yeast in lactating ruminants: interaction with dietary nitrogen level. .... 63 (1996) 149
- Gill, R.J., *see* Ravindran, V. et al.
- Givens, D.I., E.R. Deaville and A.R. Moss  
The effect of fertiliser nitrogen on the solubility and rumen degradability of dry matter  
and nitrogen in wheat grain ..... 66 (1997) 247
- Givens, D.I., *see* Huntington, J.A. et al.
- Givens, D.I., *see* Huntington, J.A. et al.
- Givens, D.I., *see* Huntington, J.A. et al.
- Givens, D.I., *see* Moss, A.R. et al.
- Givens, D.I., *see* Wilman, D. et al.
- Givens, D.I., *see* Wilman, D. et al.
- Glenn, E.P., *see* Swingle, R.S. et al.
- Goetsch, A.L., A.R. Patil, Z.S. Wang, K.K. Park, D.L. Galloway, Sr., J.E. Rossi and B.  
Kouakou  
Net flux of nutrients across splanchnic tissues in wethers consuming grass hay with or  
without corn and alfalfa ..... 66 (1997) 271
- Gonda, H.L., M. Emanuelson and M. Murphy  
The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism  
in dairy cows ..... 64 (1996) 27
- González, M.S.S., *see* Miranda, R.L.A. et al.
- González M., S., *see* Roa V., M.L. et al.
- Gordon, F.J., *see* Park, R.S. et al.
- Gottardo, F., *see* Cozzi, G. et al.
- Grande, D., *see* Nahed, J. et al.
- Groot, J.C.J., J.W. Cone, B.A. Williams, F.M.A. Debersaques and E.A. Lantinga  
Multiphasic analysis of gas production kinetics for in vitro fermentation of ruminant  
feeds ..... 64 (1996) 77
- Grundy, H.F., *see* Moss, A.R. et al.
- Guenter, W., *see* Igbanan, F.A. et al.
- Guenter, W., *see* Wang, G.J. et al.
- Gulati, S.K., E.B. Byers, Y.G. Byers, J.R. Ashes and T.W. Scott  
Effect of feeding different fat supplements on the fatty acid composition of goat milk . . 66 (1997) 159
- Gulati, S.K., T.W. Scott and J.R. Ashes  
In-vitro assessment of fat supplements for ruminants ..... 64 (1997) 127
- Gupta, B.N., *see* Srinivas, B. et al.
- Guzzon, P., B. Stefanon, C.R. Mills and P. Susmel  
Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen  
fluid. .... 67 (1997) 37
- Gwiazda, S., *see* Szymczyk, B. et al.
- Ha, J.K., *see* Bae, H.D. et al.

- Han, Z., *see* Wang, G.J. et al.
- Hanczakowski, P., *see* Szymczyk, B. et al.
- Hanson, J., *see* Kaitho, R.J. et al.
- Henry, P.R., R.C. Littell and C.B. Ammerman  
Effect of high dietary zinc concentration and length of zinc feeding on feed intake and tissue zinc concentration in sheep . . . . . 66 (1997) 237
- Henry, P.R., *see* Sandoval, M. et al.
- Hernández, E., *see* Ramos, A.J. et al.
- Hernández, F., *see* Madrid, J. et al.
- Hernández, F., *see* Madrid, J. et al.
- Herrero, M., N.S. Jessop, R.H. Fawcett, I. Murray and J.B. Dent  
Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*) by near-infrared reflectance spectroscopy using spectrally-structured sample populations . . . . . 69 (1997) 281
- Holden, L.A., *see* Aldrich, J.M. et al.
- Holmes, J.H.G., *see* Wiryawan, K.G. et al.
- Holtzapple, M.T., *see* Gandi, J. et al.
- Holzer, Z., Y. Aharoni, V. Lubimov and A. Brosh  
The feasibility of replacement of grain by tapioca in diets for growing-fattening cattle . . . . . 64 (1997) 133
- Hood, R.L., *see* Ravindran, V. et al.
- Hossain, M.I., *see* Rahman, M.H. et al.
- Hove, L., *see* Berardo, N. et al.
- Hove, L., *see* Dzowela, B.H. et al.
- Hovell, F.D.DeB., *see* Salawu, M.B. et al.
- Hovell, F.D.DeB., *see* Salawu, M.B. et al.
- Hovell, F.D.DeB., *see* Manyuchi, B. et al.
- Howie, S.A., S. Calsamiglia and M.D. Stern  
Variation in ruminal degradation and intestinal digestion of animal byproduct proteins . . . . . 63 (1996) 1
- Huber, J.T., *see* Al-Dehneh, A. et al.
- Huhtanen, P., *see* Rinne, M. et al.
- Huhtanen, P., *see* Rinne, M. et al.
- Huisman, J., *see* Gdala, J. et al.
- Humphries, W.R., *see* Galbraith, H. et al.
- Huntington, J.A. and D.I. Givens  
Studies on in situ degradation of feeds in the rumen: 3. The effect of freezing forages before and after rumen incubation . . . . . 68 (1997) 131
- Huntington, J.A. and D.I. Givens  
Studies on in situ degradation of feeds in the rumen: 1. Effect of species, bag mobility and incubation sequence on dry matter disappearance . . . . . 64 (1997) 227
- Huntington, J.A. and D.I. Givens  
Studies on in situ degradation of feeds in the rumen: 2. The effect of bag numbers incubated and post-incubation processing of residues . . . . . 68 (1997) 115
- Huyghebaert, G.  
The effect of a wheat-fat-interaction on the efficacy of a multi-enzyme preparation in broiler chickens . . . . . 68 (1997) 55
- Huyghebaert, G., *see* De Groote, G. et al.
- Hvelplund, T., *see* Madsen, J. et al.
- Hvelplund, T., *see* Mupeta, B. et al.
- Igbasan, F.A. and W. Guenter  
The evaluation and enhancement of the nutritive value of yellow-, green- and brown-seeded pea cultivars for unpelleted diets given to broiler chickens . . . . . 63 (1996) 9
- Ilchev, A., *see* Djouvinov, D. et al.
- Ingalls, J.R., *see* Undi, M. et al.
- Jaakkola, S., *see* Rinne, M. et al.

- Jaakkola, S., *see* Rinne, M. et al.
- Jacobsen, E.E., B. Skadhauge and S.-E. Jacobsen  
Effect of dietary inclusion of quinoa on broiler growth performance . . . . . 65 (1997) 5
- Jacobsen, S.-E., *see* Jacobsen, E.E. et al.
- Jakober, K.D., *see* Bae, H.D. et al.
- Jansman, A.J.M., *see* Gdala, J. et al.
- Jessop, N.S., *see* Herrero, M. et al.
- Jingura, R.M., *see* Sibanda, S. et al.
- Johansen, H.N., *see* Gdala, J. et al.
- Johnson, C.O.L.E., *see* Aderibigbe, A.O. et al.
- Johnson, K.D., *see* Wheeler, R.A. et al.
- Johnson, Z.B. and R.S. Sellers  
Analysis of a national sample of animal drugs in commercial feed in an attempt to statistically determine the causes of poor assay recovery . . . . . 68 (1997) 1
- Jørgensen, O.B., *see* Gdala, J. et al.
- Jouany, J.P., *see* Faichney, G.J. et al.
- Jouany, J.P., *see* Rogers, M. et al.
- Kaitho, R.J., N.N. Umunna, I.V. Nsahla, S. Tammings, J. Van Bruchem and J. Hanson  
Palatability of wilted and dried multipurpose tree species fed to sheep and goats . . . . . 65 (1997) 151
- Kallah, Muh.S., M. Baba, J.P. Alawa, I.R. Muhammad and R.J. Tanko  
Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria . . . . . 68 (1997) 153
- Kang, C.-W., *see* Nam, K.-T. et al.
- Kappers, I.E., *see* Valk, H. et al.
- Karanfil, O., *see* Odenyo, A.A. et al.
- Karanfil, O., *see* Odenyo, A.A. et al.
- Karunanandaa, K. and G.A. Varga  
Colonization of crop residues by white-rot fungi: cell wall monosaccharides, phenolic acids, ruminal fermentation characteristics and digestibility of cell wall fiber components in vitro . . . . . 63 (1996) 273
- Kennedy, P.M., P.J. Toscas, M.J. Faddy and D.J. Minson  
Use of a multi-exponential model to assess the effect of fermentation in the reticulorumen on particle fragmentability as simulated from artificially macerating leaf and stem fractions of two tropical grasses . . . . . 66 (1997) 111
- Khazaal, K., *see* Tolera, A. et al.
- Kiela, P., *see* Puchala, R. et al.
- Kimura, E., *see* Ohshima, M. et al.
- Klobasa, F., *see* Mbutia, E.W. et al.
- Knap, I.H., *see* Gdala, J. et al.
- Knaus, W., *see* Zollitsch, W. et al.
- Kneale, C.R., *see* Ravindran, V. et al.
- Kokko, E.G., *see* Bae, H.D. et al.
- Komprda, T., J. František, M. Štohandlová and J. Foltýn  
In-situ disappearance and content of *p*-coumaric and ferulic acid in lucerne from various vegetative stages . . . . . 67 (1997) 141
- Kouakou, B., *see* Goetsch, A.L. et al.
- Kovács, P.L., K.-H. Südekum and M. Stangassinger  
Rumen contents and ruminal and faecal particle size distribution in steers fed a mixed diet at three amounts of intake . . . . . 64 (1997) 143
- Kowalski, Z.M.  
Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps . 69 (1997) 289
- Kowalski, Z.M., A. Marszałek and C.R. Mills  
The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen . . . . . 65 (1997) 265

- Kriadees, M.S., *see* Attia, F.M. et al.
- Krishna, N., *see* Prakash, P. et al.
- Kufidis, D., *see* Christaki, E. et al.
- Lakpini, C.A.M., B.I. Balogun, J.P. Alawa, O.S. Onifade and S.M. Otaru  
Effects of graded levels of sun-dried cassava peels in supplement diets fed to Red Sokoto goats in first trimester of pregnancy . . . . . 67 (1997) 197
- Lallo, C.H.O., R. Singh, A.A. Donawa and G. Madoo  
The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions . . . . . 67 (1997) 213
- Lantinga, E.A., *see* Groot, J.C.J. et al.
- Lassalas, B., *see* Faichney, G.J. et al.
- Laswai, G.H., J.N. Ocran, F.P. Lekule and F. Sundstøl  
Effects of dietary inclusion of leucaena leaf meal with and without ferrous sulphate on the digestibility of dietary components and growth of pigs over the weight range 20-60 kg . . . . . 65 (1997) 45
- Lebzien, P. and Chr. Paul  
Use of near-infrared reflectance spectroscopy for the estimation of the microbial portion of non-ammonia-nitrogen in the duodenum of dairy cows . . . . . 68 (1997) 225
- Lee, H.-A., *see* Nam, K.-T. et al.
- Leeson, S., *see* Ajakaiye, A. et al.
- Leggett, F.L., *see* Bae, H.D. et al.
- Lekule, F.P., *see* Laswai, G.H. et al.
- Leśniewska, V., *see* Puchala, R. et al.
- Lettner, F., *see* Zollitsch, W. et al.
- Licitra, G., S. Carpino, I. Schadt, M. Avondo and S. Barresi  
Forage quality of native pastures in a Mediterranean area . . . . . 69 (1997) 315
- Lindberg, J.E., *see* Pettersson, Å. et al.
- Littell, R.C., *see* Henry, P.R. et al.
- Littell, R.C., *see* Sandoval, M. et al.
- Liu, J.-X., J.-A. Ye and H.-W. Ye  
The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw . . . . . 65 (1997) 79
- Lizardo, R., J. Peinau and A. Aumaitre  
Inclusion of sugar-beet pulp and change of protein source in the diet of the weaned piglet and their effects on digestive performance and enzymatic activities . . . . . 66 (1997) 1
- Lübbe, F., *see* Flachowsky, G. et al.
- Lubimov, V., *see* Holzer, Z. et al.
- Maasdorp, B., *see* Salawu, M.B. et al.
- Maasdorp, B.V. and M. Titterton  
Nutritional improvement of maize silage for dairying: mixed-crop silages from sole and intercropped legumes and a long season variety of maize. I. Biomass yield and nutritive value . . . . . 69 (1997) 241
- Maasdorp, B.V., *see* Dzwola, B.H. et al.
- Maasdorp, B.V., *see* Masama, E. et al.
- Maasdorp, B.V., *see* Titterton, M. et al.
- Macdonald, A.M.C., *see* D'Mello, J.P.F. et al.
- Madoo, G., *see* Lallo, C.H.O. et al.
- Madrid, J., F. Hernández, M.A. Pulgar and J.M. Cid  
Dried lemon as energetic supplement of diet based on urea-treated barley straw: effects on intake and digestibility in goats. . . . . 63 (1996) 89
- Madrid, J., F. Hernández, M.A. Pulgar and J.M. Cid  
In vivo digestibility of treated and untreated barley straw: results of direct and by-difference digestibility trials . . . . . 65 (1997) 129

- Madsen, J., T. Hvelplund and M.R. Weisbjerg  
Appropriate methods for the evaluation of tropical feeds for ruminants . . . . . 69 (1997) 53
- Madsen, J., *see* Mupeta, B. et al.
- Mafongoya, P.L., *see* Dzwola, B.H. et al.
- Mahmood, S., R. Smithard and M. Sarwar  
Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative  
pancreas weight and activity of digestive enzymes in male broilers . . . . . 65 (1997) 215
- Makkar, H.P.S. and K. Becker  
Nutritional value and antinutritional components of whole and ethanol extracted *Moringa*  
*oleifera* leaves . . . . . 63 (1996) 211
- Makkar, H.P.S., M. Blümmel and K. Becker  
In vitro rumen apparent and true digestibilities of tannin-rich forages . . . . . 67 (1997) 245
- Makkar, H.P.S., *see* Aderibigbe, A.O. et al.
- Makkar, H.P.S., *see* Blümmel, M. et al.
- Malafaia, P.A.M., *see* Vieira, R.A.M. et al.
- Malafaia, P.A.M., *see* Vieira, R.A.M. et al.
- Manyuchi, B., F.D. Deb Hovell, L.R. Ndlovu, J.H. Topps and A. Tigere  
Feeding napier hay as supplement to sheep given poor quality natural pasture hay:  
effects of level of napier hay supplement and inclusion of urea in the basal diet on  
intake and digestibility . . . . . 63 (1996) 123
- Manyuchi, B., F.D. Deb. Hovell, L.R. Ndlovu, J.H. Topps and A. Tigere  
The use of groundnut hay as a supplement for sheep consuming poor quality natural  
pasture hay . . . . . 69 (1997) 17
- Manyuchi, B., *see* Wood, C.D. et al.
- Marquardt, R.R., *see* Wang, G.J. et al.
- Marszałek, A., *see* Kowalski, Z.M. et al.
- Martín-Orúe, S.M., C. Dapoza, J. Balcells and C. Castrillo  
Purine derivatives excretion in lactating ewes fed straw diets with different levels of fish  
meal. . . . . 63 (1996) 341
- Martini, A., *see* Franci, O. et al.
- Masama, E., J.H. Topps, N.T. Ngongoni and B.V. Maasdorp  
Effects of supplementation with foliage from the tree legumes *Acacia angustissima*,  
*Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake,  
digestibility and nitrogen metabolism of sheep given maize stover ad libitum . . . . . 69 (1997) 233
- Mathers, A.I., *see* Rooke, J.A. et al.
- Matizha, W., N.T. Ngongoni and J.H. Topps  
Effect of supplementing veld hay with tropical legumes *Desmodium uncinatum*, *Sty-*  
*losanthes guianensis* and *Macroptilium atropurpureum* on intake digestibility, out-  
flow rates, nitrogen retention and live weight gain in lambs . . . . . 69 (1997) 187
- Mayne, C.S., *see* Dawson, L.E.R. et al.
- Mayne, C.S., *see* Dawson, L.E.R. et al.
- Mbanzamihigo, L., E. Vandycke and D.I. Demeyer  
Degradation of methionine by rumen contents in vitro and efficiency of its protection . . 67 (1997) 339
- Mbuthia, E.W., F. Klobasa, C.K. Gachuiiri and A. Abate  
Effect of treatment with formaldehyde and formic acid on immunoglobulin content of  
stored bovine colostrum . . . . . 67 (1997) 291
- Mbwile, R.P. and P. Udén  
Effects of age and season on growth and nutritive value of Rhodes grass (*Chloris*  
*gayana* cv. Kunth) . . . . . 65 (1997) 87
- Mbwile, R.P. and P. Udén  
The effect of feeding level on intake and digestibility of Rhodes grass (*Chloris gayana*,  
cv Kunth) by dairy cows . . . . . 66 (1997) 181
- McAllister, T.A., *see* Bae, H.D. et al.
- McKay, I., *see* Salawu, M.B. et al.

- McKinnon, J.J., *see* Mustafa, A.F. et al.
- Mehra, U.R., *see* Toppo, S. et al.
- Meissner, H.H.  
Recent research on forage utilization by ruminant livestock in South Africa. . . . . 69 (1997) 103
- Mendoza, M.G.D., *see* Miranda, R.L.A. et al.
- Mendoza M., G., *see* Roa V., M.L. et al.
- Mero, R.N. and P. Udén  
Promising tropical grasses and legumes as feed resources in Central Tanzania. II. In  
sacco rumen degradation characteristics of four grasses and legumes . . . . . 69 (1997) 341
- Michalet-Doreau, B., *see* Philippeau, C. et al.
- Michalet-Doreau, B., *see* Tovar-Gómez, M.R. et al.
- Miller, H.M., *see* Wiryawan, K.G. et al.
- Millet, L., *see* Faichney, G.J. et al.
- Mills, C.R., *see* Guzzon, P. et al.
- Mills, C.R., *see* Kowalski, Z.M. et al.
- Min, B.-S., *see* Nam, K.-T. et al.
- Minson, D.J., *see* Kennedy, P.M. et al.
- Miranda, R.L.A., M.G.D. Mendoza, J.R. Bárcena-Gama, M.S.S. González, R. Ferrara,  
C.M.E. Ortega and P.M.A. Cobos  
Effect of *Saccharomyces cerevisiae* or *Aspergillus oryzae* cultures and NDF level on  
parameters of ruminal fermentation . . . . . 63 (1996) 289
- Miron, J. and D. Ben-Ghedalia  
Digestibility by sheep of direct cut alfalfa silage made with ozonated cotton stalks . . . . 67 (1997) 311
- Moore, K.J., *see* Chriyaa, A. et al.
- Moore, K.J., *see* Chriyaa, A. et al.
- Morrison III, W.H., *see* Akin, D.E. et al.
- Moshtaghi-Nia, S.A., *see* Undi, M. et al.
- Moslehuddin, *see* Rahman, M.H. et al.
- Moss, A.R., D.I. Givens, H.F. Grundy and K.P.A. Wheeler  
The nutritive value for ruminants of lupin seeds from determinate plants and their  
replacement of soya bean meal in diets for young growing cattle . . . . . 68 (1997) 11
- Moss, A.R., *see* Givens, D.I. et al.
- Moss, A.R., *see* Rooke, J.A. et al.
- Motta-Ferreira, W., *see* Carabaño, R. et al.
- Mitimuni, J., *see* Blümmel, M. et al.
- Muhammad, I.R., *see* Kallah, Muh.S. et al.
- Muller, L.D., *see* Aldrich, J.M. et al.
- Munoz, S., *see* Schmidely, Ph. et al.
- Mupangwa, J.F., N.T. Ngongoni, J.H. Topps and P. Ndlovu  
Chemical composition and dry matter degradability profiles of forage legumes *Cassia*  
*rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropur-*  
*pureum* cv. Siratro at 8 weeks of growth (pre-anthesis). . . . . 69 (1997) 167
- Mupeta, B., M.R. Weisbjerg, T. Hvelplund and J. Madsen  
Digestibility of amino acids in protein rich tropical feeds for ruminants estimated with  
the mobile bag technique. . . . . 69 (1997) 271
- Murphy, M., *see* Gonda, H.L. et al.
- Murphy, M.R., *see* Corley, R.N. et al.
- Murray, I., *see* Herrero, M. et al.
- Mustafa, A.F., J.J. McKinnon, P.A. Thacker and D.A. Christensen  
Effect of borage meal on nutrient digestibility and performance of ruminants and pigs . . 64 (1997) 273
- Nagwani, M., *see* Gandhi, J. et al.
- Nahed, J., L. Villafuerte, D. Grande, F. Pérez-Gil, T. Alemán and J. Carmona  
Fodder shrub and tree species in the Highlands of southern Mexico . . . . . 68 (1997) 213



- Nam, K.-T., H.-A. Lee, B.-S. Min and C.-W. Kang  
Influence of dietary supplementation with linseed and vitamin E on fatty acids,  
 $\alpha$ -tocopherol and lipid peroxidation in muscles of broiler chicks . . . . . 66 (1997) 149
- Nastis, A.S., *see* Yiakoulaki, M.D. et al.
- Ndlovu, L.R. and F.V. Nherera  
Chemical composition and relationship to in vitro gas production of Zimbabwean  
browsable indigenous tree species . . . . . 69 (1997) 121
- Ndlovu, L.R., *see* Manyuchi, B. et al.
- Ndlovu, L.R., *see* Manyuchi, B. et al.
- Ndlovu, P., *see* Baloyi, J.J. et al.
- Ndlovu, P., *see* Mupangwa, J.F. et al.
- Nefzaoui, A., *see* Ben Salem, H. et al.
- Newbold, C.J., *see* Chikunya, S. et al.
- Newman, C.W., *see* Svihus, B. et al.
- Newman, R.K., *see* Svihus, B. et al.
- Ngongoni, N.T., *see* Baloyi, J.J. et al.
- Ngongoni, N.T., *see* Masama, E. et al.
- Ngongoni, N.T., *see* Matizha, W. et al.
- Ngongoni, N.T., *see* Mupangwa, J.F. et al.
- Nguekouo Foyette, C., *see* Teguia, A. et al.
- Nherera, F.V., *see* Ndlovu, L.R. et al.
- Njwe, R.M., *see* Teguia, A. et al.
- Nsahlai, I.V., *see* Kaitho, R.J. et al.
- Nsahlai, V.I., *see* Bonsi, M.L.K. et al.
- Ocran, J.N., *see* Laswai, G.H. et al.
- Odenyo, A.A., P.O. Osuji and O. Karanfil  
Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa . . . . . 67 (1997) 169
- Odenyo, A.A., P.O. Osuji, O. Karanfil and K. Adinew  
Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep . . 65 (1997) 99
- Odenyo, A.A., *see* Osuji, P.O. et al.
- Odoardi, M., *see* Berardo, N. et al.
- Ohshima, M., E. Kimura and H.-o. Yokota  
A method of making good quality silage from direct cut alfalfa by spraying previously  
fermented juice . . . . . 66 (1997) 129
- Onifade, A.A. and G.M. Babatunde  
Comparative response of broiler chicks to a high fibre diet supplemented with four  
antibiotics. . . . . 64 (1997) 337
- Onifade, O.S., *see* Lakpini, C.A.M. et al.
- Ørskov, E.R., *see* Tolera, A. et al.
- Ortega, C.M.E., *see* Miranda, R.L.A. et al.
- Ortega C., M.E., *see* Roa V., M.L. et al.
- Osuji, P.O. and A.A. Odenyo  
The role of legume forages as supplements to low quality roughages — ILRI experience. 69 (1997) 27
- Osuji, P.O., *see* Bonsi, M.L.K. et al.
- Osuji, P.O., *see* Odenyo, A.A. et al.
- Osuji, P.O., *see* Odenyo, A.A. et al.
- Otaru, S.M., *see* Lakpini, C.A.M. et al.
- Ouellet, D.R., J.R. Seoane, D.M. Veira and J.G. Proulx  
Effects of supplementation with fish meal or fish protein hydrolysate on growth, nutrient  
digestibility and rumen fermentation of growing cattle fed grass silage . . . . . 68 (1997) 307
- Papadoyannis, I.N., *see* Yiakoulaki, M.D. et al.
- Pardio, V.T., *see* Waliszewski, K.N. et al.
- Park, K.K., *see* Goetsch, A.L. et al.

- Park, R.S., F.J. Gordon, R.E. Agnew, R.J. Barnes and R.W.J. Steen  
The use of Near Infrared Reflectance Spectroscopy on dried samples to predict biological parameters of grass silage . . . . . 68 (1997) 235
- Pasinato, A.M., *see* Elizalde, J.C. et al.
- Paterson, R.T., *see* Roothaert, R.L. et al.
- Patil, A.R., *see* Goetsch, A.L. et al.
- Paul, Chr., *see* Lebzien, P. et al.
- Pavlov, D., *see* Djouvinov, D. et al.
- Pedroso, A.F., *see* Silva, A.G. et al.
- Peiniau, J., *see* Comizzoli, P. et al.
- Peiniau, J., *see* Lizardo, R. et al.
- Pereira, J.C., *see* Vieira, R.A.M. et al.
- Pereira, J.C., *see* Vieira, R.A.M. et al.
- Pérez-Gil, F., *see* Nahed, J. et al.
- Pessarakli, M., *see* Al-Dehneh, A. et al.
- Petit, H.V., *see* Plaisance, R. et al.
- Pettersson, Å. and J.E. Lindberg  
Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition. . . . . 66 (1997) 97
- Pettersson, D., *see* Castañón, J.I.R. et al.
- Peyraud, J.L., L. Astigarraga and P. Faverdin  
Digestion of fresh perennial ryegrass fertilized at two levels of nitrogen by lactating dairy cows . . . . . 64 (1997) 155
- Peyraud, J.L., *see* Delagarde, R. et al.
- Philippeau, C. and B. Michalet-Doreau  
Influence of genotype and stage of maturity of maize on rate of ruminal starch degradation . . . . . 68 (1997) 25
- Plaisance, R., H.V. Petit, J.R. Seoane and R. Rioux  
The nutritive value of canola, heat-treated canola and fish meals as protein supplements for lambs fed grass silage . . . . . 68 (1997) 139
- Planquette, P., *see* Comizzoli, P. et al.
- Poncet, C., *see* Faichney, G.J. et al.
- Porter, M.G. and D. Barton  
A comparison of methods for the determination of dry matter concentration in grass silage including an extraction method for water. . . . . 68 (1997) 67
- Prakash, P., D.V. Reddy, R. Ramachandra Reddy and N. Krishna  
The catalytic effect of supplementation of protein meals on utilization of rice straw-poultry droppings-rice bran diet in buffaloes . . . . . 63 (1996) 229
- Prawirodigdo, S., E.S. Batterham, L.M. Andersen, F.R. Dunshea and D.J. Farrell  
Nitrogen retention in pigs given diets containing cottonseed meal or soybean meal . . . . 67 (1997) 205
- Proulx, J.G., *see* Ouellet, D.R. et al.
- Puchala, R., R. Zabielski, V. Leśniewska, P. Kiela and W. Barej  
Influence of duodenal infusion of L-methionine and L-methionine-dl-sulfoxide on amino acid concentration and duodenal electrical activity in Friesian calves . . . . . 66 (1997) 75
- Pulgar, M.A., *see* Madrid, J. et al.
- Pulgar, M.A., *see* Madrid, J. et al.
- Rahal, A., A. Singh and M. Singh  
Effect of urea treatment and diet composition on, and prediction of nutritive value of rice straw of different cultivars . . . . . 68 (1997) 165
- Rahman, M.H., M.I. Hossain and Moslehuddin  
Mineral balance of rats fed on diets containing sweet lupin (*Lupinus angustifolius* L.) or its fractions . . . . . 65 (1997) 231
- Rajion, M.A., *see* Salam Abdullah, A. et al.

- Raju, A.A., C. Rose and N.M. Rao  
Enzymatic hydrolysis of tannery fleshings using chicken intestine proteases . . . . . 66 (1997) 139
- Ramachandra Reddy, R., *see* Prakash, P. et al.
- Ramirez Piñeres, M.A., W.C. Ellis, G. Wu and S.C. Ricke  
Effects of diphenyliodonium chloride on proteolysis and leucine metabolism by rumen microorganisms. . . . . 65 (1997) 139
- Ramirez Piñeres, M.A., W.C. Ellis, G. Wu and S.C. Ricke  
Effects of protease inhibitors on degradation of H<sub>3</sub>[<sup>14</sup>C]-casein by ruminal microorganisms. . . . . 64 (1997) 113
- Ramos, A.J. and E. Hernández  
Prevention of aflatoxicosis in farm animals by means of hydrated sodium calcium aluminosilicate addition to feedstuffs: a review . . . . . 65 (1997) 197
- Rao, N.M., *see* Raju, A.A. et al.
- Ravindran, V., R.L. Hood, R.J. Gill, C.R. Kneale and W.L. Bryden  
Nutritional evaluation of grain amaranth (*Amaranthus hypochondriacus*) in broiler diets. Reddy, D.V.  
The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes . . . . . 69 (1997) 305
- Reddy, D.V., *see* Prakash, P. et al.
- Ricke, S.C., *see* Ramirez Piñeres, M.A. et al.
- Ricke, S.C., *see* Ramirez Piñeres, M.A. et al.
- Rigsby, L.L., *see* Akin, D.E. et al.
- Rinne, M., P. Huhtanen and S. Jaakkola  
Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics . . . . . 67 (1997) 19
- Rinne, M., S. Jaakkola and P. Huhtanen  
Grass maturity effects on cattle fed silage-based diets. 1. Organic matter digestion, rumen fermentation and nitrogen utilization. . . . . 67 (1997) 1
- Rioux, R., *see* Plaisance, R. et al.
- Roa V., M.L., J.R. Bárcena-Gama, S. González M., G. Mendoza M., M.E. Ortega C. and C. García B.  
Effect of fiber source and a yeast culture (*Saccharomyces cerevisiae*<sup>1026</sup>) on digestion and the environment in the rumen of cattle . . . . . 64 (1997) 327
- Robinson, P.H.  
Evaluation of a seal by-product meal as a feedstuff for dairy cows. . . . . 63 (1996) 51
- Rode, L., *see* Chikunya, S. et al.
- Rogers, M., J.P. Jouany, P. Thivend and J.P. Fontenot  
The effects of short-term and long-term monensin supplementation, and its subsequent withdrawal on digestion in sheep . . . . . 65 (1997) 113
- Romero, A., *see* Waliszewski, K.N. et al.
- Rooke, J.A., A.R. Moss, A.I. Mathers and R. Crawshaw  
Assessment using sheep of the nutritive value of liquid potato feed and partially fried potato chips (french fries) . . . . . 64 (1997) 243
- Roothaert, R.L. and R.T. Paterson  
Recent work on the production and utilization of tree fodder in East Africa . . . . . 69 (1997) 39
- Rose, C., *see* Raju, A.A. et al.
- Rossi, J.E., *see* Goetsch, A.L. et al.
- Rouzeau, A., *see* Schmidely, Ph. et al.
- Ruano-Ramos, A., *see* García-Ciudad, A. et al.
- Salam Abdullah, A. and M.A. Rajion  
Dietary factors affecting entero-hepatic function of ruminants in the tropics. . . . . 69 (1997) 79
- Salawu, M.B., T. Acamovic, C.S. Stewart and B. Maasdorp  
Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, pipelicolic acid and polyethylene glycol on in vitro organic matter digestibility. . . . . 69 (1997) 207

- Salawu, M.B., T. Acamovic, C.S. Stewart and F.D.DeB. Hovell  
 Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro . . . . . 69 (1997) 67
- Salawu, M.B., T. Acamovic, C.S. Stewart, F.D.DeB. Hovell and I. McKay  
 Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus . . . . . 69 (1997) 219
- Sandoval, M., P.R. Henry, R.C. Littell, R.J. Cousins and C.B. Ammerman  
 Estimation of the relative bioavailability of zinc from inorganic zinc sources for sheep. . . . . 66 (1997) 223
- Santini, F.J., *see* Elizalde, J.C. et al.
- Sarwar, M., *see* Mahmood, S. et al.
- Sauvant, D., *see* Chapoutot, P. et al.
- Sauvant, D., *see* Giger-Reverdin, S. et al.
- Sauvant, D., *see* Schmidely, Ph. et al.
- Scaife, J.R., *see* Galbraith, H. et al.
- Schaarmann, G., *see* Flachowsky, G. et al.
- Schadt, I., *see* Licitra, G. et al.
- Schmidely, Ph., H. Archimède, P. Bas, A. Rouzeau, S. Munoz and D. Sauvant  
 Effects of the synchronization of the rate of carbohydrates and nitrogen release of the concentrate on rumen fermentation, plasma metabolites and insulin, in the dry pregnant goat . . . . . 63 (1996) 163
- Schöne, F., *see* Flachowsky, G. et al.
- Scott, T.W., *see* Gulati, S.K. et al.
- Scott, T.W., *see* Gulati, S.K. et al.
- Sellers, R.S., *see* Johnson, Z.B. et al.
- Selmer-Olsen, I., *see* Svihus, B. et al.
- Seoane, J.R., *see* Ouellet, D.R. et al.
- Seoane, J.R., *see* Plaisance, R. et al.
- Sethuraman, A., *see* Akin, D.E. et al.
- Shelton, H.M., *see* Dalzell, S.A. et al.
- Shin, H.T., *see* Bae, H.D. et al.
- Sibanda, S., R.M. Jingura and J.H. Topps  
 The effect of level of inclusion of the legume *Desmodium uncinatum* and the use of molasses or ground maize as additives on the chemical composition of grass- and maize-legume silages . . . . . 68 (1997) 295
- Silva, A.G., R.C. Wanderley, A.F. Pedroso and G. Ashbell  
 Ruminal digestion kinetics of citrus peel . . . . . 68 (1997) 247
- Sinclair, F.L., *see* Thapa, B. et al.
- Sinclair, F.L., *see* Thapa, B. et al.
- Singh, A., *see* Rahal, A. et al.
- Singh, M., *see* Rahal, A. et al.
- Singh, R., *see* Lallo, C.H.O. et al.
- Skadhaug, B., *see* Jacobsen, E.E. et al.
- Smithard, R., *see* Mahmood, S. et al.
- Sniffen, C.J., *see* Bernal-Santos, G. et al.
- Soevik, T.  
 Statistical evaluation of the discrepancy between analysed and formulated crude protein content in commercial feed mixtures for pigs . . . . . 65 (1997) 207
- Spais, A.B., *see* Christaki, E. et al.
- Squires, V., *see* Swingle, R.S. et al.
- Srinivas, B. and B.N. Gupta  
 Rumen fermentation, bacterial and total volatile fatty acid (TVFA) production rates in cattle fed on urea-molasses-mineral block licks supplement . . . . . 65 (1997) 275

- Stangassinger, M., *see* Kovács, P.L. et al.
- Steen, R.W.J., *see* Dawson, L.E.R. et al.
- Steen, R.W.J., *see* Park, R.S. et al.
- Stefanon, B., *see* Guzzon, P. et al.
- Stern, M.D., *see* Howie, S.A. et al.
- Stewart, C.S., *see* Salawu, M.B. et al.
- Stewart, C.S., *see* Salawu, M.B. et al.
- Stewart, C.S., *see* Salawu, M.B. et al.
- Štohandlová, M., *see* Komprda, T. et al.
- Südekum, K.-H., *see* Kovács, P.L. et al.
- Sundstøl, F., *see* Laswai, G.H. et al.
- Susmel, P., *see* Guzzon, P. et al.
- Svihus, B., C.W. Newman, R.K. Newman and I. Selmer-Olsen  
Changes in extract viscosity, amino acid content, and soluble and insoluble  $\beta$ -glucan  
and dietary fibre content of barley during different high moisture storage conditions . . . . . 64 (1997) 257
- Swingle, R.S., E.P. Glenn and V. Squires  
Growth performance of lambs fed mixed diets containing halophyte ingredients . . . . . 63 (1996) 137
- Szymczyk, B., S. Gwiazda and P. Hanczakowski  
The nutritive value for rats and chicks of unextracted and defatted leaf protein  
concentrates from red clover and Italian ryegrass . . . . . 63 (1996) 297
- Taliaferro, C.M., *see* Dabo, S.M. et al.
- Tamminga, S., *see* Kaitho, R.J. et al.
- Tamminga, S., *see* Valk, H. et al.
- Tanko, R.J., *see* Kallah, Muh.S. et al.
- Teguia, A., R.M. Njwe and C. Nguckouo Foyette  
Effects of replacement of maize with dried leaves of sweet potato (*Hypomoea batatas*)  
and perennial peanuts (*Arachis glabrata* Benth) on the growth performance of  
finishing broilers . . . . . 66 (1997) 283
- Thacker, P.A. and T.C. Baas  
Effects of gastric pH on the activity of exogenous pentosanase and the effect of  
pentosanase supplementation of the diet on the performance of growing-finishing  
pigs . . . . . 63 (1996) 187
- Thacker, P.A., *see* Mustafa, A.F. et al.
- Thapa, B., D.H. Walker and F.L. Sinclair  
Indigenous knowledge of the feeding value of tree fodder . . . . . 67 (1997) 97
- Thapa, B., D.H. Walker and F.L. Sinclair  
Indigenous knowledge of the feeding value of tree fodder . . . . . 68 (1997) 37
- Theurer, C.B., *see* Al-Dehneh, A. et al.
- Thivend, P., *see* Rogers, M. et al.
- Thomas, M., D.J. Van Zuilichem and A.F.B. Van der Poel  
Physical quality of pelleted animal feed. 2. contribution of processes and its conditions . . . . . 64 (1997) 173
- Thonney, M.L., *see* Bernal-Santos, G. et al.
- Tigere, A., *see* Manyuchi, B. et al.
- Tigere, A., *see* Manyuchi, B. et al.
- Tisserand, J.L., *see* Ben Salem, H. et al.
- Titterton, M. and B.V. Maasdorp  
Nutritional improvement of maize silage for dairying: mixed crop silages from sole and  
intercropped legumes and a long season variety of maize. 2. Ensilage . . . . . 69 (1997) 263
- Titterton, M., *see* Maasdorp, B.V. et al.
- Tolera, A., K. Khazaal and E.R. Ørskov  
Nutritive evaluation of some browse species . . . . . 67 (1997) 181

- Toppo, S., A.K. Verma, R.S. Dass and U.R. Mehra  
Nutrient utilization and rumen fermentation pattern in crossbred cattle fed different planes of nutrition supplemented with urea molasses mineral block . . . . . 64 (1997) 101
- Topps, J.H.  
Nutritive value of indigenous browse in Africa in relation to the needs of wild ungulates. . . . . 69 (1997) 143
- Topps, J.H., *see* Baloyi, J.J. et al.  
Topps, J.H., *see* Manyuchi, B. et al.  
Topps, J.H., *see* Manyuchi, B. et al.  
Topps, J.H., *see* Masama, E. et al.  
Topps, J.H., *see* Matizha, W. et al.  
Topps, J.H., *see* Mupangwa, J.F. et al.  
Topps, J.H., *see* Sibanda, S. et al.  
Toscas, P.J., *see* Kennedy, P.M. et al.  
Tovar-Gómez, M.R., J.C. Emile, B. Michalet-Doreau and Y. Barrière  
In situ degradation kinetics of maize hybrid stalks . . . . . 68 (1997) 77
- Tsirgogianni, D., *see* Belibasakis, N.G. et al.  
Tuah, A.K., *see* Bonsi, M.L.K. et al.  
Turner, N.D., *see* Gandhi, J. et al.  
Udén, P., *see* Mbwire, R.P. et al.  
Udén, P., *see* Mbwire, R.P. et al.  
Udén, P., *see* Mero, R.N. et al.  
Umunna, N.N., *see* Bonsi, M.L.K. et al.  
Umunna, N.N., *see* Kaitho, R.J. et al.  
Undi, M., S.A. Moshtaghi-Nia, K.M. Wittenberg and J.R. Ingalls  
A comparative study on amino acid availability of moist heated canola meal for poultry vs. ruminants . . . . . 63 (1996) 179
- Valk, H., I.E. Kappers and S. Tamminga  
In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen . . . . . 63 (1996) 63
- Vanacker, J.M., *see* De Boever, J.L. et al.  
Van Bruchem, J., *see* Kaitho, R.J. et al.  
Van der Poel, A.F.B., H.M.P. Fransen and M.W. Bosch  
Effect of expander conditioning and/or pelleting of a diet containing tapioca, pea and soybean meal on the total tract digestibility in growing pigs . . . . . 66 (1997) 289
- Van der Poel, A.F.B., *see* Thomas, M. et al.  
Vandycke, E., *see* Mbanzamihigo, L. et al.  
Van Gelder, A.H., *see* Cone, J.W. et al.  
Van Leeuwen, P., *see* Gdala, J. et al.  
Van Soest, P.J., *see* Bernal-Santos, G. et al.  
Van Zuilichem, D.J., *see* Thomas, M. et al.  
Varga, G.A., *see* Aldrich, J.M. et al.  
Varga, G.A., *see* Karunanandaa, K. et al.  
Vázquez de Aldana, B.R., *see* García-Ciudad, A. et al.  
Veira, D.M., *see* Ouellet, D.R. et al.  
Verma, A.K., *see* Toppo, S. et al.  
Vieira, R.A.M., J.C. Pereira, P.A.M. Malafaia and A.C. De Queiroz  
Application of non-linear models in the description of in situ degradation profiles of the elephant grass (*Pennisetum purpureum* Schum., Mineiro variety) . . . . . 66 (1997) 197
- Vieira, R.A.M., J.C. Pereira, P.A.M. Malafaia and A.C. De Queiroz  
The influence of elephant-grass (*Pennisetum purpureum* Schum., Mineiro variety) growth on the nutrient kinetics in the rumen . . . . . 67 (1997) 151
- Villafuerte, L., *see* Nahed, J. et al.  
Wagner, P., *see* Gdala, J. et al.

- Waliszewski, K.N., A. Romero and V.T. Pardo  
Use of cane condensed molasses solubles in feeding broilers. . . . . 67 (1997) 253
- Walker, D.H., *see* Thapa, B. et al.
- Walker, D.H., *see* Thapa, B. et al.
- Wallace, R.J., *see* Chikunya, S. et al.
- Waller, S.S., *see* Chriyaa, A. et al.
- Waller, S.S., *see* Chriyaa, A. et al.
- Wanderley, R., *see* Al-Dehneh, A. et al.
- Wanderley, R.C., *see* Silva, A.G. et al.
- Wang, G.J., R.R. Marquardt, W. Guenter, Z. Zhang and Z. Han  
Effects of enzyme supplementation and irradiation of rice bran on the performance of growing Leghorn and broiler chickens. . . . . 66 (1997) 47
- Wang, Z.S., *see* Goetsch, A.L. et al.
- Weisbjerg, M.R., *see* Madsen, J. et al.
- Weisbjerg, M.R., *see* Mupeta, B. et al.
- Wen-shyg Chiou, P., K.-L. Chen and B. Yu  
Toxicity, tissue accumulation and residue in egg and excreta of copper in laying hens . . 67 (1997) 49
- Wheeler, K.P.A., *see* Moss, A.R. et al.
- Wheeler, R.A., W.R. Chaney, K.D. Johnson and L.G. Butler  
*Leucaena* forage analysis using near infrared reflectance spectroscopy. . . . . 64 (1996) 1
- White, J.S.  
Nutrient conservation of baled hay by sprayer application of feed grade fat with or without barn storage . . . . . 65 (1997) 1
- Whittemore, C.T.  
An analysis of methods for the utilisation of net energy concepts to improve the accuracy of feed evaluation in diets for pigs . . . . . 68 (1997) 89
- Williams, B.A., *see* Groot, J.C.J. et al.
- Wilman, D., G.R. Foulkes and D.I. Givens  
A comparison of four methods of estimating the rate and extent of cell wall degradation in grass silages . . . . . 63 (1996) 99
- Wilman, D., G.R. Foulkes and D.I. Givens  
The rate and extent of cell-wall degradation in vitro for 40 silages varying in composition and digestibility . . . . . 63 (1996) 111
- Wiryawan, K.G., H.M. Miller and J.H.G. Holmes  
Mung beans (*Phaseolus aureus*) for finishing pigs . . . . . 66 (1997) 297
- Wittenberg, K.M., *see* Undi, M. et al.
- Woldeghebriel, A., *see* Corley, R.N. et al.
- Wood, C.D. and B. Manyuchi  
Use of an in vitro gas production method to investigate interactions between veld hay and Napier hay or groundnut hay supplements . . . . . 67 (1997) 265
- Wright, J.B. and D.L. Brown  
Identification of 18:3(*n*-3) linolenic acid, 18:3(*n*-6) linolenic acid and 18:2(*n*-6) linoleic acid in Zimbabwean browses preferred by wild black rhinoceroses (*Diceros bicornis*) determined by GC-MS analysis. . . . . 69 (1997) 195
- Wu, G., *see* Ramirez Piñeres, M.A. et al.
- Wu, G., *see* Ramirez Piñeres, M.A. et al.
- Wu, S.-S., *see* Chiou, P.W.-S. et al.
- Yanke, L.J., *see* Bae, H.D. et al.
- Ye, H.-W., *see* Liu, J.-X. et al.
- Ye, J.-A., *see* Liu, J.-X. et al.
- Yiakoulaki, M.D., I.N. Papadoyannis and A.S. Nastis  
Determination of marker chromic oxide in faeces of grazing goats on Mediterranean shrublands by AAS. . . . . 67 (1997) 163

Yokota, H.-o., *see* Ohshima, M. et al.

Yu, B., *see* Chiou, P.W.-S. et al.

Yu, B., *see* Wen-shyg Chiou, P. et al.

Zabielski, R., *see* Puchala, R. et al.

Zhang, Z., *see* Wang, G.J. et al.

Zollitsch, W., W. Knaus, F. Aichinger and F. Lettner

Effects of different dietary fat sources on performance and carcass characteristics of  
broilers . . . . .

66 (1997) 63





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Animal Feed Science and Technology 69 (1997) 373-415

ANIMAL FEED  
SCIENCE AND  
TECHNOLOGY

## Subject Index, Volumes 63-69

### AAS

Determination of marker chromic oxide in faeces of grazing goats on Mediterranean shrublands by AAS, 67 (1997) 163

### *Acacia angustissima*

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

### *Acacia cyanophylla* Lindl.

Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed lucerne hay-based diets, 68 (1997) 101

### *Acacia saligna*

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

### *Acacia* sp.

The role of legume forages as supplements to low quality roughages — ILRI experience, 69 (1997) 27

### Acid protease

Enzymatic hydrolysis of tannery fleshings using chicken intestine proteases, 66 (1997) 139

### Adaptation

The effects of short-term and long-term monensin supplementation, and its subsequent withdrawal on digestion in sheep, 65 (1997) 113

### ADF

Ensiling quality of columbus grass (*Sorghum almum*) grown in northern Nigeria, 68 (1997) 153

### Adsorption

Prevention of aflatoxicosis in farm animals by means of hydrated sodium calcium aluminosilicate addition to feedstuffs: a review, 65 (1997) 197

### Aflatoxins

Prevention of aflatoxicosis in farm animals by means of hydrated sodium calcium aluminosilicate addition to feedstuffs: a review, 65 (1997) 197

### Age

Effects of age and season on growth and nutritive value of Rhodes grass (*Chloris gayana* cv. Kunth), 65 (1997) 87

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

The effect of feeding level on intake and digestibility of Rhodes grass (*Chloris gayana*, cv. Kunth) by dairy cows, 66 (1997) 181

### Alfalfa silage

A method of making good quality silage from direct cut alfalfa by spraying previously fermented juice, 66 (1997) 129

Digestibility by sheep of direct cut alfalfa silage made with ozonated cotton stalks, 67 (1997) 311

### *Amaranthus hypochondriacus*

Nutritional evaluation of grain amaranth (*Amaranthus hypochondriacus*) in broiler diets, 63 (1996) 323

**Amines**

The effect of infusion of putrescine and gamma amino butyric acid on the intake of steers offered grass silage containing three levels of lactic acid, 66 (1997) 15

The effect of intraruminal infusions of amines and gamma amino butyric acid on rumen fermentation parameters and food intake of steers offered grass silage, 63 (1996) 35

**Amino acid composition**

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

**Amino acids**

Digestibility of dried and toasted peas in pigs. 2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen fluid, 67 (1997) 37

**Ammoniated rice straw**

The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw, 65 (1997) 79

**Ammonia treatment**

Effect of ammonia and urea treatments on digestibility and nitrogen content of dehydrated lucerne, 67 (1997) 69

**Anaerobic fungi**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Anaerobic storage**

Changes in extract viscosity, amino acid content, and soluble and insoluble  $\beta$ -glucan and dietary fibre content of barley during different high moisture storage conditions, 64 (1997) 257

**Analysis**

Statistical evaluation of the discrepancy between analysed and formulated crude protein content in commercial feed mixtures for pigs, 65 (1997) 207

**Angora goats**

The effect of dietary molybdenum supplementation on tissue copper concentrations, mohair fibre and carcass characteristics of growing Angora goats, 67 (1997) 83

**Animal byproduct protein**

Variation in ruminal degradation and intestinal digestion of animal byproduct proteins, 63 (1996) 1

**Animal drugs**

Analysis of a national sample of animal drugs in commercial feed in an attempt to statistically determine the causes of poor assay recovery, 68 (1997) 1

**Anthesis**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

**Antibiotics supplementation**

Comparative response of broiler chicks to a high fibre diet supplemented with four antibiotics, 64 (1997) 337

**Antigrowth factor**

Nutrient composition and feeding value of *Salicornia bigelovii* torr meal in broiler diets, 65 (1997) 257

**Antinutritional factors**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

**Anti-nutritional**

Mung beans (*Phaseolus aureus*) for finishing pigs, 66 (1997) 297

**Apparent digestibility**

In vitro rumen apparent and true digestibilities of tannin-rich forages, 67 (1997) 245

**Apparent metabolizable energy value**

Nutritional evaluation of grain amaranth (*Amaranthus hypochondriacus*) in broiler diets, 63 (1996) 323

**Arabinoxylans**

Effects of enzyme supplementation and irradiation of rice bran on the performance of growing Leghorn and broiler chickens, 66 (1997) 47

***Aspergillus oryzae***

Effect of *Saccharomyces cerevisiae* or *Aspergillus oryzae* cultures and NDF level on parameters of ruminal fermentation, 63 (1996) 289

**Associative effect**

Response surface analyses of the associative effects of lucerne hay, wheat straw and maize gluten feed on growing lambs, 67 (1997) 279

 **$\alpha$ -tocopherol**

Influence of dietary supplementation with linseed and vitamin E on fatty acids,  $\alpha$ -tocopherol and lipid peroxidation in muscles of broiler chicks, 66 (1997) 149

***Atriplex***

Growth performance of lambs fed mixed diets containing halophyte ingredients, 63 (1996) 137

**Attachment**

Effect of silica on the colonization of rice straw by ruminal bacteria, 65 (1997) 165

**Autoclaving**

Nutritional evaluation of grain amaranth (*Amaranthus hypochondriacus*) in broiler diets, 63 (1996) 323

**Avoparcin**

Effect of the dietary inclusion of the growth promoter avoparcin on the performance and carcass characteristics of growing quail, 65 (1997) 287

**Awassi lambs**

Supplementary feeding value of urea-treated olive cake when fed to growing Awassi lambs, 64 (1997) 287

**Bacteria**

Anatomical and histological factors affecting the ruminal degradation of stem tissues in *Bothriochloa* species, 67 (1997) 299

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen fluid, 67 (1997) 37

**Bacterial production**

Rumen fermentation, bacterial and total volatile fatty acid (TVFA) production rates in cattle fed on urea-molasses-mineral block licks supplement, 65 (1997) 275

**Bacterial protein**

Incorporation of recycled urea-N into ruminal bacteria flowing to the small intestine of dairy cows fed a high-grain or high-forage diet, 68 (1997) 327

**Bagasse**

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

**Bag mobility**

Studies on in situ degradation of feeds in the rumen: 1. Effect of species, bag mobility and incubation sequence on dry matter disappearance, 64 (1997) 227

**Barley**

Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition, 66 (1997) 97

**Basil**

Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil by-products as roughages for sheep feeding, 68 (1997) 287

**Beef cattle**

Effects of supplementation with fish meal or fish protein hydrolysate on growth, nutrient digestibility and rumen fermentation of growing cattle fed grass silage, 68 (1997) 307

The effect of spreading sodium bicarbonate over the surface of grass silage on the intake of grass silages by beef cattle, 67 (1997) 61

**Bicarbonate**

The effect of spreading sodium bicarbonate over the surface of grass silage on the intake of grass silages by beef cattle, 67 (1997) 61

**Bio-assay method**

The bio-availability of phosphorus from feed phosphates for broilers as influenced by bio-assay method, dietary Ca-level and feed form, 69 (1997) 329

**Bio-availability**

The bio-availability of phosphorus from feed phosphates for broilers as influenced by bio-assay method, dietary Ca-level and feed form, 69 (1997) 329

**Bioavailability**

Effect of high dietary zinc concentration and length of zinc feeding on feed intake and tissue zinc concentration in sheep, 66 (1997) 237

Estimation of the relative bioavailability of zinc from inorganic zinc sources for sheep, 66 (1997) 223

**Biodegradation**

Enzymatic hydrolysis of tannery fleshings using chicken intestine proteases, 66 (1997) 139

**Biohydrogenation**

Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps, 69 (1997) 289

**Biomass**

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

**Blackgram**

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

**Blood components**

Effects of niacin on milk yield, milk composition, and blood components of dairy cows in hot weather, 64 (1996) 53

**Borage meal**

Effect of borage meal on nutrient digestibility and performance of ruminants and pigs, 64 (1997) 273

**Botanical composition**

Forage quality of native pastures in a Mediterranean area, 69 (1997) 315

***Brachystegia spiciformis***

Chemical composition and degradability of *Brachystegia spiciformis* (musasa) leaves and stems harvested over 4 months from three sites in Zimbabwe, 69 (1997) 179

**Broiler**

Effects of different dietary fat sources on performance and carcass characteristics of broilers, 66 (1997) 63

The bio-availability of phosphorus from feed phosphates for broilers as influenced by bio-assay method, dietary Ca-level and feed form, 69 (1997) 329

**Broiler chicken**

The evaluation and enhancement of the nutritive value of yellow-, green- and brown-seeded pea cultivars for unpelleted diets given to broiler chickens, 63 (1996) 9

**Broiler chicks**

Comparative response of broiler chicks to a high fibre diet supplemented with four antibiotics, 64 (1997) 337

The effect of a wheat-fat-interaction on the efficacy of a multi-enzyme preparation in broiler chickens, 68 (1997) 55

**Broiler litter**

Ruminal digestion kinetics of citrus peel, 68 (1997) 247

**Broiler performance**

Nutrient composition and feeding value of *Salicornia bigelovii* torr meal in broiler diets, 65 (1997) 257

**Broilers**

Effect of dietary inclusion of quinoa on broiler growth performance, 65 (1997) 5

**Brown-midrib**

In situ degradation kinetics of maize hybrid stalks, 68 (1997) 77

**Browse**

Browse foliage and annual legume pods as supplements to wheat straw for sheep, 66 (1997) 85

Intake, digestion, and nitrogen balance of sheep fed shrub foliage and medic pods as a supplement to wheat straw, 65 (1997) 183

Nutritive evaluation of some browse species, 67 (1997) 181

Nutritive value of indigenous browse in Africa in relation to the needs of wild ungulates, 69 (1997) 143

#### Browse Plus

Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus, 69 (1997) 219

Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro, 69 (1997) 67

#### Browuses

Identification of 18:3(*n*-3) linolenic acid, 18:3(*n*-6) linolenic acid and 18:2(*n*-6) linoleic acid in Zimbabwean browuses preferred by wild black rhinoceroses (*Diceros bicornis*) determined by GC-MS analysis, 69 (1997) 195

#### Buffaloes

The catalytic effect of supplementation of protein meals on utilization of rice straw-poultry droppings-rice bran diet in buffaloes, 63 (1996) 229

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

#### By-product feedstuffs

Digestion kinetics of neutral detergent fiber and chemical composition within some selected by-product feedstuffs, 67 (1997) 127

#### By-products

Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil by-products as roughages for sheep feeding, 68 (1997) 287

#### Cajanus cajan

Near infrared calibration of chemical constituents of *Cajanus cajan* (pigeon pea) used as forage, 69 (1997) 201

#### Calcium source

Effects of calcium source, particle size and time on in-vitro calcium solubility of some indigenous Nigerian mineral ingredients for poultry diets, 65 (1997) 293

#### Ca-level

The bio-availability of phosphorus from feed phosphates for broilers as influenced by bio-assay method, dietary Ca-level and feed form, 69 (1997) 329

#### Calf

Influence of duodenal infusion of L-methionine and L-methionine-dl-sulfoxide on amino acid concentration and duodenal electrical activity in Friesian calves, 66 (1997) 75

#### Calliandra calothyrsus

Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus, 69 (1997) 219

Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, pipecolic acid and polyethylene glycol on in vitro organic matter digestibility, 69 (1997) 207

#### Canola meal

A comparative study on amino acid availability of moist heated canola meal for poultry vs. ruminants, 63 (1996) 179

#### Carbohydrates

Carbohydrate and lignin contents of plant materials used in animal feeding, 67 (1997) 319

Digestibility of dried and toasted peas in pigs. 1. Ileal and total tract digestibilities of carbohydrates, 64 (1997) 293

Effects of the synchronization of the rate of carbohydrates and nitrogen release of the concentrate on rumen fermentation, plasma metabolites and insulin, in the dry pregnant goat, 63 (1996) 163

**Carcass characteristics**

Effect of the dietary inclusion of the growth promoter avoparcin on the performance and carcass characteristics of growing quail, 65 (1997) 287

**Carotenoids**

The nutritive value for rats and chicks of unextracted and defatted leaf protein concentrates from red clover and Italian ryegrass, 63 (1996) 297

**Ca salts of fatty acids**

The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen, 65 (1997) 265

**Ca soaps of rapeseed fatty acids**

Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps, 69 (1997) 289

**Cassia**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

**Catalytic level**

The catalytic effect of supplementation of protein meals on utilization of rice straw-poultry droppings-rice bran diet in buffaloes, 63 (1996) 229

**Catfish**

The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish muscle, 65 (1997) 35

**Cattle**

Effect of fiber source and a yeast culture (*Saccharomyces cerevisiae*<sup>1026</sup>) on digestion and the environment in the rumen of cattle, 64 (1997) 327

Rumen contents and ruminal and faecal particle size distribution in steers fed a mixed diet at three amounts of intake, 64 (1997) 143

The effect of stage of harvest on the process of digestion in cattle fed winter oats indoors. II.

Nitrogen digestion and microbial protein synthesis, 63 (1996) 245

**Cecum**

Substitution of sugarbeet pulp for alfalfa hay in diets for growing rabbits, 65 (1997) 249

**Cellulose**

Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen fluid, 67 (1997) 37

**Cell wall**

Effect of ammonia and urea treatments on digestibility and nitrogen content of dehydrated lucerne, 67 (1997) 69

Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics, 67 (1997) 19

**Cell wall degradation**

A comparison of four methods of estimating the rate and extent of cell wall degradation in grass silages, 63 (1996) 99

The rate and extent of cell-wall degradation in vitro for 40 silages varying in composition and digestibility, 63 (1996) 111

**Chamaecytisus palmensis**

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

**Chemical analysis**

Nutrient composition and feeding value of *Salicornia bigelovii* torr meal in broiler diets, 65 (1997) 257

**Chemical composition**

Changes in extract viscosity, amino acid content, and soluble and insoluble  $\beta$ -glucan and dietary fibre content of barley during different high moisture storage conditions, 64 (1997) 257

Chemical composition and degradability of *Brachystegia spiciformis* (musasa) leaves and stems harvested over 4 months from three sites in Zimbabwe, 69 (1997) 179

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv.

- Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167
- Chemical composition and relationship to in vitro gas production of Zimbabwean browsable indigenous tree species, 69 (1997) 121
- Near infrared calibration of chemical constituents of *Cajanus cajan* (pigeon pea) used as forage, 69 (1997) 201
- Recent work on the establishment, production and utilization of multipurpose trees as a feed resource in Zimbabwe, 69 (1997) 1
- The effect of level of inclusion of the legume *Desmodium uncinatum* and the use of molasses or ground maize as additives on the chemical composition of grass- and maize-legume silages, 68 (1997) 295
- Chemical preservation**  
Effect of treatment with formaldehyde and formic acid on immunoglobulin content of stored bovine colostrum, 67 (1997) 291
- Chemical quality**  
A method of making good quality silage from direct cut alfalfa by spraying previously fermented juice, 66 (1997) 129
- Chicken intestines**  
Enzymatic hydrolysis of tannery fleshings using chicken intestine proteases, 66 (1997) 139
- Chicks feeding**  
The nutritive value for rats and chicks of unextracted and defatted leaf protein concentrates from red clover and Italian ryegrass, 63 (1996) 297
- Chinese milk vetch silage**  
The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw, 65 (1997) 79
- Cholesterol**  
Nutrient composition and feeding value of *Salicornia bigelovii* torr meal in broiler diets, 65 (1997) 257
- Chromic oxide**  
Determination of marker chromic oxide in faeces of grazing goats on Mediterranean shrublands by AAS, 67 (1997) 163
- Ciliate protozoa**  
Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169
- Cloning**  
Rumen manipulation for the improved utilization of tropical forages, 69 (1997) 91
- Coating**  
The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen, 65 (1997) 265
- Cobalt**  
Evaluation of praseodymium as a liquid marker in rumen turnover studies, 63 (1996) 201
- Collared peccary**  
Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215
- Colostrum**  
Effect of treatment with formaldehyde and formic acid on immunoglobulin content of stored bovine colostrum, 67 (1997) 291
- Columbus grass**  
Ensiling quality of columbus grass (*Sorghum almum*) grown in northern Nigeria, 68 (1997) 153
- Comparative slaughter**  
Response surface analyses of the associative effects of lucerne hay, wheat straw and maize gluten feed on growing lambs, 67 (1997) 279
- Complete diets**  
Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro analyses, 68 (1997) 277
- Composition**  
Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

Nutritional evaluation of grain amaranth (*Amaranthus hypochondriacus*) in broiler diets, 63 (1996) 323

### Concentrate

Digestibility of amino acids in protein rich tropical feeds for ruminants estimated with the mobile bag technique, 69 (1997) 271

### Condensed tannin analysis

Methods of field preservation and selection of sample tissue for condensed tannin analysis in *Leucaena* species, 68 (1997) 353

### Condensed tannins

Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro, 69 (1997) 67

### Conditioning

Physical quality of pelleted animal feed. 2. contribution of processes and its conditions, 64 (1997) 173

### Cooling

Physical quality of pelleted animal feed. 2. contribution of processes and its conditions, 64 (1997) 173

### Copper

The effect of dietary molybdenum supplementation on tissue copper concentrations, mohair fibre and carcass characteristics of growing Angora goats, 67 (1997) 83

Toxicity, tissue accumulation and residue in egg and excreta of copper in laying hens, 67 (1997) 49

### Correlation

Interannual variations of nutrient concentrations in botanical fractions from extensively managed grasslands, 66 (1997) 257

### Costa Rica

Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*) by near-infrared reflectance spectroscopy using spectrally-structured sample populations, 69 (1997) 281

### Cottonseed meal

Nitrogen retention in pigs given diets containing cottonseed meal or soybean meal, 67 (1997) 205

### Creatinine

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

### Crude enzymes

Effects of enzyme supplementation and irradiation of rice bran on the performance of growing Leghorn and broiler chickens, 66 (1997) 47

### Crude protein

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

### Cultivar

Effect of urea treatment and diet composition on, and prediction of nutritive value of rice straw of different cultivars, 68 (1997) 165

### Curve fitting

Description of gas production profiles with a three-phasic model, 66 (1997) 31

Multiphasic analysis of gas production kinetics for in vitro fermentation of ruminant feeds, 64 (1996) 77

### Dairy cow

Effects of feeding propylene glycol to mid-lactating dairy cows, 64 (1996) 43

### Dairy cows

Digestion of fresh perennial ryegrass fertilized at two levels of nitrogen by lactating dairy cows, 64 (1997) 155

Effect of dietary protein source on performances and rumen characteristics of dairy cows, 68 (1997) 339

Effects of niacin on milk yield, milk composition, and blood components of dairy cows in hot weather, 64 (1996) 53

Evaluation of a seal by-product meal as a feed-stuff for dairy cows, 63 (1996) 51



Evaluation of praseodymium as a liquid marker in rumen turnover studies, 63 (1996) 201

The effect of feeding level on intake and digestibility of Rhodes grass (*Chloris gayana*, cv Kunth) by dairy cows, 66 (1997) 181

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

Use of near-infrared reflectance spectroscopy for the estimation of the microbial portion of non-ammonia-nitrogen in the duodenum of dairy cows, 68 (1997) 225

#### **Dairy goat**

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

#### **Dairying**

Nutritional improvement of maize silage for dairying: mixed-crop silages from sole and intercropped legumes and a long season variety of maize. 1. Biomass yield and nutritive value, 69 (1997) 241

#### **Dairy ruminants**

Effects of a probiotic yeast in lactating ruminants: interaction with dietary nitrogen level, 63 (1996) 149

#### **Deamination**

Effects of diphenyliodonium chloride on proteolysis and leucine metabolism by rumen microorganisms, 65 (1997) 139

#### **Degradability**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

Digestibility of amino acids in protein rich tropical feeds for ruminants estimated with the mobile bag technique, 69 (1997) 271

Studies on in situ degradation of feeds in the rumen. 3. The effect of freezing forages before and after rumen incubation, 68 (1997) 131

The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen, 65 (1997) 265

#### **Degradability in sacco**

Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro, 69 (1997) 67

#### **Degradation**

Degradation of methionine by rumen contents in vitro and efficiency of its protection, 67 (1997) 339

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

#### **Dehulling**

Effect of dietary inclusion of quinoa on broiler growth performance, 65 (1997) 5

#### **Dehydrated lucerne**

Effect of ammonia and urea treatments on digestibility and nitrogen content of dehydrated lucerne, 67 (1997) 69

#### **Delignification**

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermispora* and *Cyathus stercoreus*, 63 (1996) 305

#### **Detergent fibre**

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

#### **Determination**

Determination of marker chromic oxide in faeces of grazing goats on Mediterranean shrublands by AAS, 67 (1997) 163

#### **Diaryliodonium**

Effects of diphenyliodonium chloride on proteolysis and leucine metabolism by rumen microorganisms, 65 (1997) 139

**Diceros bicornis**

Identification of 18:3(*n*-3) linolenic acid, 18:3(*n*-6) linolenic acid and 18:2(*n*-6) linoleic acid in Zimbabwean browses preferred by wild black rhinoceroses (*Diceros bicornis*) determined by GC—MS analysis, 69 (1997) 195

**Dietary factors**

Dietary factors affecting entero—hepatic function of ruminants in the tropics, 69 (1997) 79

**Dietary fat**

Effect of feeding different fat supplements on the fatty acid composition of goat milk, 66 (1997) 159

**Dietary fibre**

Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215

**Digesta markers**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Digestibility**

Anatomical and histological factors affecting the ruminal degradation of stem tissues in *Bothriochloa* species, 67 (1997) 299

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermispora* and *Cyathus stercoreus*, 63 (1996) 305

Digestibility by sheep of direct cut alfalfa silage made with ozonated cotton stalks, 67 (1997) 311

Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215

Effect of ammonia and urea treatments on digestibility and nitrogen content of dehydrated lucerne, 67 (1997) 69

Effect of expander conditioning and/or pelleting of a diet containing tapioca, pea and soybean meal on the total tract digestibility in growing pigs, 66 (1997) 289

Effect of supplementing veld hay with tropical legumes *Desmodium uncinatum*, *Strylosanthes guianensis* and *Macroptilium atropurpureum* on intake digestibility, outflow rates, nitrogen retention and live weight gain in lambs, 69 (1997) 187

Effects of dietary inclusion of leucaena leaf meal with and without ferrous sulphate on the digestibility of dietary components and growth of pigs over the weight range 20–60 kg, 65 (1997) 45

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover ad libitum, 69 (1997) 233

Feeding napier hay as supplement to sheep given poor quality natural pasture hay: effects of level of napier hay supplement and inclusion of urea in the basal diet on intake and digestibility, 63 (1996) 123

Grass maturity effects on cattle fed silage-based diets. 1. Organic matter digestion, rumen fermentation and nitrogen utilization, 67 (1997) 1

Growth performance of lambs fed mixed diets containing halophyte ingredients, 63 (1996) 137

Inclusion of sugar-beet pulp and change of protein source in the diet of the weaned piglet and their effects on digestive performance and enzymatic activities, 66 (1997) 1

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

Prediction of the energy value of rabbit feeds varying widely in fibre content, 64 (1996) 61

Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro analyses, 68 (1997) 277

Substitution of sugarbeet pulp for alfalfa hay in diets for growing rabbits, 65 (1997) 249

Supplementary feeding value of urea-treated olive cake when fed to growing Awassi lambs, 64 (1997) 287

The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

The effect of feeding level on intake and digestibility of Rhodes grass (*Chloris gayana*, cv Kunth) by dairy cows, 66 (1997) 181

The effect of protein supplement source or supply pattern on the intake, digestibility, rumen kinetics, nitrogen utilisation and growth of Ethiopian Menz sheep fed teff straw, 64 (1996) 11

The nutritive value of canola, heat-treated canola and fish meals as protein supplements for lambs fed grass silage, 68 (1997) 139

#### Digestible lysine and methionine

Nutritive value of raw and extruded pea-rape-seed blends for ruminants, 65 (1997) 59

#### Digestion

Assessment using sheep of the nutritive value of liquid potato feed and partially fried potato chips (french fries), 64 (1997) 243

Effect of fiber source and a yeast culture (*Saccharomyces cerevisiae*<sup>1026</sup>) on digestion and the environment in the rumen of cattle, 64 (1997) 327

Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics, 67 (1997) 19

Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps, 69 (1997) 289

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

The effect of stage of harvest on the process of digestion in cattle fed winter oats indoors. II. Nitrogen digestion and microbial protein synthesis, 63 (1996) 245

The effects of short-term and long-term monensin supplementation, and its subsequent withdrawal on digestion in sheep, 65 (1997) 113

#### Digestion kinetics

Application of non-linear models in the description of in situ degradation profiles of the elephant grass (*Pennisetum purpureum* Schum., Mineiro variety), 66 (1997) 197

Digestion kinetics of neutral detergent fiber and chemical composition within some selected by-product feedstuffs, 67 (1997) 127

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

The influence of elephant-grass (*Pennisetum purpureum* Schum., Mineiro variety) growth on the nutrient kinetics in the rumen, 67 (1997) 151

#### Digestive enzymes

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

Inclusion of sugar-beet pulp and change of protein source in the diet of the weaned piglet and their effects on digestive performance and enzymatic activities, 66 (1997) 1

#### Disappearance

In-situ disappearance and content of *p*-coumaric and ferulic acid in lucerne from various vegetative stages, 67 (1997) 141

#### DM degradability in sacco

Nutritive evaluation of some browse species, 67 (1997) 181

#### Drug assays

Analysis of a national sample of animal drugs in commercial feed in an attempt to statistically determine the causes of poor assay recovery, 68 (1997) 1

#### Dry

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

**Drying**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

**Dry matter and nitrogen degradability**

Chemical composition and degradability of *Brachystegia spiciformis* (musasa) leaves and stems harvested over 4 months from three sites in Zimbabwe, 69 (1997) 179

**Dry matter degradability (DMD)**

Effect of urea treatment and diet composition on, and prediction of nutritive value of rice straw of different cultivars, 68 (1997) 165

**Duodenal protein**

Use of near-infrared reflectance spectroscopy for the estimation of the microbial portion of non-ammonia-nitrogen in the duodenum of dairy cows, 68 (1997) 225

**Duodenum**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Durability**

Physical quality of pelleted animal feed. 2. contribution of processes and its conditions, 64 (1997) 173

**Efficiency**

The effect of a wheat-fat-interaction on the efficacy of a multi-enzyme preparation in broiler chickens, 68 (1997) 55

**Elephant-grass**

Application of non-linear models in the description of in situ degradation profiles of the elephant grass (*Pennisetum purpureum* Schum., Mineiro variety), 66 (1997) 197

The influence of elephant-grass (*Pennisetum purpureum* Schum., Mineiro variety) growth on the nutrient kinetics in the rumen, 67 (1997) 151

**Energetic supplement**

Dried lemon as energetic supplement of diet based on urea-treated barley straw: effects on intake and digestibility in goats, 63 (1996) 89

**Energy**

Prediction of the energy value of rabbit feeds varying widely in fibre content, 64 (1996) 61

Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro analyses, 68 (1997) 277

**Energy and protein value**

The nutritive value for ruminants of lupin seeds from determinate plants and their replacement of soya bean meal in diets for young growing cattle, 68 (1997) 11

**Energy efficiency**

Substitution of sugarbeet pulp for alfalfa hay in diets for growing rabbits, 65 (1997) 249

**Energy / protein requirements**

Influence of dietary rumen-degradable protein on bacterial growth in the rumen of sheep receiving different energy sources, 63 (1996) 333

**Energy requirements**

Nutritive value of indigenous browse in Africa in relation to the needs of wild ungulates, 69 (1997) 143

**Energy value**

Appropriate methods for the evaluation of tropical feeds for ruminants, 69 (1997) 53

Nutritive value of raw and extruded pea-rape-seed blends for ruminants, 65 (1997) 59

**Ensiling**

The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions, 67 (1997) 213

**Entero—hepatic function**

Dietary factors affecting entero—hepatic function of ruminants in the tropics, 69 (1997) 79

**Enzyme**

Changes in extract viscosity, amino acid content, and soluble and insoluble  $\beta$ -glucan and dietary fibre content of barley during different high moisture storage conditions, 64 (1997) 257

Effects of gastric pH on the activity of exogenous pentosanase and the effect of pentosanase supplementation of the diet on the performance of growing-finishing pigs, 63 (1996) 187

#### Enzyme addition

The evaluation and enhancement of the nutritive value of yellow-, green- and brown-seeded pea cultivars for unpelleted diets given to broiler chickens, 63 (1996) 9

#### Enzymes

Appropriate methods for the evaluation of tropical feeds for ruminants, 69 (1997) 53

The effect of a wheat-fat-interaction on the efficacy of a multi-enzyme preparation in broiler chickens, 68 (1997) 55

#### Essential fatty acids

Identification of 18:3(*n*-3) linolenic acid, 18:3(*n*-6) linolenic acid and 18:2(*n*-6) linoleic acid in Zimbabwean browses preferred by wild black rhinoceroses (*Diceros bicornis*) determined by GC-MS analysis, 69 (1997) 195

#### Ethiopian highland sheep

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

#### Ewe

Purine derivatives excretion in lactating ewes fed straw diets with different levels of fish meal, 63 (1996) 341

#### Exogenous enzymes

The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

#### Expander conditioning

Physical quality of pelleted animal feed. 2. contribution of processes and its conditions, 64 (1997) 173

#### Expander treatment

Effect of expander conditioning and/or pelleting of a diet containing tapioca, pea and soybean meal on the total tract digestibility in growing pigs, 66 (1997) 289

#### Extrusion

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

#### Exudative moisture loss

The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish muscle, 65 (1997) 35

#### Fat

Effects of different dietary fat sources on performance and carcass characteristics of broilers, 66 (1997) 63

The effect of a wheat-fat-interaction on the efficacy of a multi-enzyme preparation in broiler chickens, 68 (1997) 55

#### Fat application

Nutrient conservation of baled hay by sprayer application of feed grade fat with or without barn storage, 65 (1997) 1

#### Fat content and secretion

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

#### Fat supplements

In-vitro assessment of fat supplements for ruminants, 64 (1997) 127

#### Fatty acid composition

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

#### Fatty acid pattern

Influence of oilseeds in combination with vitamin E supplementation in the diet on backfat quality of pigs, 64 (1997) 91

#### Fatty acids

Effects of different dietary fat sources on performance and carcass characteristics of broilers, 66 (1997) 63

Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps, 69 (1997) 289

The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish muscle, 65 (1997) 35

**Feed**

Analysis of a national sample of animal drugs in commercial feed in an attempt to statistically determine the causes of poor assay recovery, 68 (1997) 1

Effects of different dietary fat sources on performance and carcass characteristics of broilers, 66 (1997) 63

**Feed additives**

Rumen manipulation for the improved utilization of tropical forages, 69 (1997) 91

**Feed efficiency**

Comparative response of broiler chicks to a high fibre diet supplemented with four antibiotics, 64 (1997) 337

**Feed evaluation**

An analysis of methods for the utilisation of net energy concepts to improve the accuracy of feed evaluation in diets for pigs, 68 (1997) 89

**Feed form**

The bio-availability of phosphorus from feed phosphates for broilers as influenced by bio-assay method, dietary Ca-level and feed form, 69 (1997) 329

**Feeding**

Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil by-products as roughages for sheep feeding, 68 (1997) 287

**Feeding value**

Prediction of the feeding value of maize silages by chemical parameters, in vitro digestibility and NIRS, 66 (1997) 211

**Feed intake**

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

**Feed interactions**

Use of an in vitro gas production method to investigate interactions between veld hay and Napier hay or groundnut hay supplements, 67 (1997) 265

**Feed particles**

Use of a multi-exponential model to assess the effect of fermentation in the reticulorumen on particle fragmentability as simulated from artificially macerating leaf and stem fractions of two tropical grasses, 66 (1997) 111

**Feed processing**

Effect of expander conditioning and/or pelleting of a diet containing tapioca, pea and soybean meal on the total tract digestibility in growing pigs, 66 (1997) 289

**Feed resource**

Recent work on the establishment, production and utilization of multipurpose trees as a feed resource in Zimbabwe, 69 (1997) 1

**Feedstuffs**

Carbohydrate and lignin contents of plant materials used in animal feeding, 67 (1997) 319

Mycotoxins, 69 (1997) 155

Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro analyses, 68 (1997) 277

**Fermentation pattern**

Colonization of crop residues by white-rot fungi: cell wall monosaccharides, phenolic acids, ruminal fermentation characteristics and digestibility of cell wall fiber components in vitro, 63 (1996) 273

**Fermentation**

Grass maturity effects on cattle fed silage-based diets. 1. Organic matter digestion, rumen fermentation and nitrogen utilization, 67 (1997) 1

Multiphasic analysis of gas production kinetics for in vitro fermentation of ruminant feeds, 64 (1996) 77

Use of a multi-exponential model to assess the effect of fermentation in the reticulorumen on particle fragmentability as simulated from artificially macerating leaf and stem fractions of two tropical grasses, 66 (1997) 111

**Fermentation profile**

Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed lucerne hay-based diets, 68 (1997) 101

**Fermented alfalfa juice**

A method of making good quality silage from direct cut alfalfa by spraying previously fermented juice, 66 (1997) 129

**Ferrous sulphate**

Effects of dietary inclusion of leucaena leaf meal with and without ferrous sulphate on the digestibility of dietary components and growth of pigs over the weight range 20-60 kg, 65 (1997) 45

**Fertiliser nitrogen**

The effect of fertiliser nitrogen on the solubility and rumen degradability of dry matter and nitrogen in wheat grain, 66 (1997) 247

**Fertilization**

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

**Fertilizer**

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

**Fibre**

Effect of fiber source and a yeast culture (*Saccharomyces cerevisiae*<sup>1026</sup>) on digestion and the environment in the rumen of cattle, 64 (1997) 327

Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition, 66 (1997) 97

In vitro rumen apparent and true digestibilities of tannin-rich forages, 67 (1997) 245

Prediction of the energy value of rabbit feeds varying widely in fibre content, 64 (1996) 61

**Fibre degradation**

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

**Fibrobacter succinogenes**

Effect of silica on the colonization of rice straw by ruminal bacteria, 65 (1997) 165

**Finishing broilers**

Effects of replacement of maize with dried leaves of sweet potato (*Hypomoea batatas*) and perennial peanuts (*Arachis glabrata* Benth) on the growth performance of finishing broilers, 66 (1997) 283

**First trimester**

Effects of graded levels of sun-dried cassava peels in supplement diets fed to Red Sokoto goats in first trimester of pregnancy, 67 (1997) 197

**Fish protein**

Effects of supplementation with fish meal or fish protein hydrolysate on growth, nutrient digestibility and rumen fermentation of growing cattle fed grass silage, 68 (1997) 307

**Fodder**

Fodder shrub and tree species in the Highlands of southern Mexico, 68 (1997) 213

**Fodder-production potential**

Recent work on the establishment, production and utilization of multipurpose trees as a feed resource in Zimbabwe, 69 (1997) 1

**Fodder trees**

Recent work on the production and utilization of tree fodder in East Africa, 69 (1997) 39

**Fodder utilization**

Recent work on the production and utilization of tree fodder in East Africa, 69 (1997) 39

**Forage**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

Ensiling quality of columbus grass (*Sorghum almum*) grown in northern Nigeria, 68 (1997) 153

Feeding napier hay as supplement to sheep given poor quality natural pasture hay: effects of level of napier hay supplement and inclusion of urea in the basal diet on intake and digestibility, 63 (1996) 123

Net flux of nutrients across splanchnic tissues in wethers consuming grass hay with or without corn and alfalfa, 66 (1997) 271

Studies on in situ degradation of feeds in the rumen. 3. The effect of freezing forages before and after rumen incubation, 68 (1997) 131

#### Forage quality

*Leucaena* forage analysis using near infrared reflectance spectroscopy, 64 (1996) 1

#### Forages

The nutritive value of canola, heat-treated canola and fish meals as protein supplements for lambs fed grass silage, 68 (1997) 139

#### Fragmentation

Use of a multi-exponential model to assess the effect of fermentation in the reticulorumen on particle fragmentability as simulated from artificially macerating leaf and stem fractions of two tropical grasses, 66 (1997) 111

#### Freezing

Studies on in situ degradation of feeds in the rumen. 3. The effect of freezing forages before and after rumen incubation, 68 (1997) 131

#### Fresh forage

The effect of stage of harvest on the process of digestion in cattle fed winter oats indoors. II. Nitrogen digestion and microbial protein synthesis, 63 (1996) 245

#### Fungal contamination

Mycotoxins, 69 (1997) 155

#### Fungal sporangia

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

#### Fungi

Anatomical and histological factors affecting the ruminal degradation of stem tissues in *Bothriochloa* species, 67 (1997) 299

#### $\alpha$ -Galactosidase

The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed carbohydrates and dietary protein in young pigs, 67 (1997) 115

#### Gas production

Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, picecolic acid and polyethylene glycol on in vitro organic matter digestibility, 69 (1997) 207

Chemical composition and relationship to in vitro gas production of Zimbabwean browsable indigenous tree species, 69 (1997) 121

Description of gas production profiles with a three-phasic model, 66 (1997) 31

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

Multiphasic analysis of gas production kinetics for in vitro fermentation of ruminant feeds, 64 (1996) 77

#### Gas production in vitro

Nutritive evaluation of some browse species, 67 (1997) 181

#### General feed mixtures

Statistical evaluation of the discrepancy between analysed and formulated crude protein content in commercial feed mixtures for pigs, 65 (1997) 207

#### Generation time

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

#### Genotype

Influence of genotype and stage of maturity of maize on rate of ruminal starch degradation, 68 (1997) 25

#### Goat

Dried lemon as energetic supplement of diet based on urea-treated barley straw: effects on intake and digestibility in goats, 63 (1996) 89

Effects of the synchronization of the rate of carbohydrates and nitrogen release of the concentrate on rumen fermentation, plasma metabolites and insulin, in the dry pregnant goat, 63 (1996) 163



**Goats**

Determination of marker chromic oxide in faeces of grazing goats on Mediterranean shrublands by AAS, 67 (1997) 163

In vivo digestibility of treated and untreated barley straw: results of direct and by-difference digestibility trials, 65 (1997) 129

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

**Grain legumes**

Mung beans (*Phaseolus aureus*) for finishing pigs, 66 (1997) 297

**Grain replacement**

The feasibility of replacement of grain by tapioca in diets for growing-fattening cattle, 64 (1997) 133

**Grass**

Digestion of fresh perennial ryegrass fertilized at two levels of nitrogen by lactating dairy cows, 64 (1997) 155

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

The effect of level of inclusion of the legume *Desmodium uncinatum* and the use of molasses or ground maize as additives on the chemical composition of grass- and maize-legume silages, 68 (1997) 295

**Grasses**

Promising tropical grasses and legumes as feed resources in Central Tanzania. II. In sacco rumen degradation characteristics of four grasses and legumes, 69 (1997) 341

**Grassland**

Interannual variations of nutrient concentrations in botanical fractions from extensively managed grasslands, 66 (1997) 257

**Grass maturity**

Grass maturity effects on cattle fed silage-based diets. 1. Organic matter digestion, rumen fermentation and nitrogen utilization, 67 (1997) 1

Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics, 67 (1997) 19

**Grass silage**

A comparison of four methods of estimating the rate and extent of cell wall degradation in grass silages, 63 (1996) 99

The effect of spreading sodium bicarbonate over the surface of grass silage on the intake of grass silages by beef cattle, 67 (1997) 61

The use of Near Infrared Reflectance Spectroscopy on dried samples to predict biological parameters of grass silage, 68 (1997) 235

**Grazing**

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

**Grazing behaviour**

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

**Greengram**

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

**Groundnut hay**

The use of groundnut hay as a supplement for sheep consuming poor quality natural pasture hay, 69 (1997) 17

**Growing calves**

The feasibility of replacement of grain by tapioca in diets for growing-fattening cattle, 64 (1997) 133

**Growing cattle**

The nutritive value for ruminants of lupin seeds from determinate plants and their replacement of soya bean meal in diets for young growing cattle, 68 (1997) 11

**Growing lambs**

Response surface analyses of the associative effects of lucerne hay, wheat straw and maize gluten feed on growing lambs, 67 (1997) 279

**Growing pigs**

Nitrogen retention in pigs given diets containing cottonseed meal or soybean meal, 67 (1997) 205

**Growth**

Comparative response of broiler chicks to a high fibre diet supplemented with four antibiotics, 64 (1997) 337

Mung beans (*Phaseolus aureus*) for finishing pigs, 66 (1997) 297

The effect of dietary molybdenum supplementation on tissue copper concentrations, mohair fibre and carcass characteristics of growing Angora goats, 67 (1997) 83

The effect of protein supplement source or supply pattern on the intake, digestibility, rumen kinetics, nitrogen utilisation and growth of Ethiopian Menz sheep fed teff straw, 64 (1996) 11

The nutritive value of canola, heat-treated canola and fish meals as protein supplements for lambs fed grass silage, 68 (1997) 139

**Growth performance**

Effects of dietary inclusion of leucaena leaf meal with and without ferrous sulphate on the digestibility of dietary components and growth of pigs over the weight range 20-60 kg, 65 (1997) 45

**Growth rate**

The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw, 65 (1997) 79

**pH**

Effects of gastric pH on the activity of exogenous pentosanase and the effect of pentosanase supplementation of the diet on the performance of growing-finishing pigs, 63 (1996) 187

**Haematological status**

The effect of dietary molybdenum supplementation on tissue copper concentrations, mohair fibre and carcass characteristics of growing Angora goats, 67 (1997) 83

**Halophytes**

Growth performance of lambs fed mixed diets containing halophyte ingredients, 63 (1996) 137

**Hardness**

Physical quality of pelleted animal feed, 2. contribution of processes and its conditions, 64 (1997) 173

**Hay preservation**

Nutrient conservation of baled hay by sprayer application of feed grade fat with or without barn storage, 65 (1997) 1

**Heat treatment**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of Jatropha meal, 67 (1997) 223

**Heifers**

The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw, 65 (1997) 79

**High fibre diets**

Comparative response of broiler chicks to a high fibre diet supplemented with four antibiotics, 64 (1997) 337

**Highlands**

Fodder shrub and tree species in the Highlands of southern Mexico, 68 (1997) 213

**Hindgut digestion**

Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition, 66 (1997) 97

**HSCAS**

Prevention of aflatoxicosis in farm animals by means of hydrated sodium calcium aluminosilicate addition to feedstuffs: a review, 65 (1997) 197

**Hydrated sodium calcium aluminosilicate**

Prevention of aflatoxicosis in farm animals by means of hydrated sodium calcium aluminosilicate addition to feedstuffs: a review, 65 (1997) 197

**Ileal digestibility**

Digestibility of dried and toasted peas in pigs.  
1. Ileal and total tract digestibilities of carbohydrates, 64 (1997) 293

Digestibility of dried and toasted peas in pigs.  
2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition, 66 (1997) 97

The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed carbohydrates and dietary protein in young pigs, 67 (1997) 115

**Immunoglobulins**

Effect of treatment with formaldehyde and formic acid on immunoglobulin content of stored bovine colostrum, 67 (1997) 291

**Incubation sequence**

Studies on in situ degradation of feeds in the rumen: 1. Effect of species, bag mobility and incubation sequence on dry matter disappearance, 64 (1997) 227

**Indigenous browse**

Chemical composition and relationship to in vitro gas production of Zimbabwean browsable indigenous tree species, 69 (1997) 121

**Indigenous knowledge**

Indigenous knowledge of the feeding value of tree fodder, 67 (1997) 97

Indigenous knowledge of the feeding value of tree fodder, 68 (1997) 37

**Inhibitors**

Effects of protease inhibitors on degradation of  $H_2[^{14}C]$ -casein by ruminal microorganisms, 64 (1997) 113

**Inoculant**

The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions, 67 (1997) 213

**In sacco**

Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus, 69 (1997) 219

Promising tropical grasses and legumes as feed resources in Central Tanzania. II. In sacco rumen degradation characteristics of four grasses and legumes, 69 (1997) 341

**In sacco digestion**

Digestion kinetics of neutral detergent fiber and chemical composition within some selected by-product feedstuffs, 67 (1997) 127

**In situ**

Evaluation of the nutritive value of kudzu (*Pueraria lobata*) as a feed for ruminants, 68 (1997) 183

Studies on in situ degradation of feeds in the rumen. 3. The effect of freezing forages before and after rumen incubation, 68 (1997) 131

Studies on in situ degradation of feeds in the rumen: 1. Effect of species, bag mobility and incubation sequence on dry matter disappearance, 64 (1997) 227

Studies on in situ degradation of feeds in the rumen: 2. The effect of bag numbers incubated and post-incubation processing of residues, 68 (1997) 115

**In situ degradation**

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

**In situ technique**

Ruminal digestion kinetics of citrus peel, 68 (1997) 247

**Intake**

Appropriate methods for the evaluation of tropical feeds for ruminants, 69 (1997) 53

Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed lucerne hay-based diets, 68 (1997) 101

Effect of supplementing veld hay with tropical legumes *Desmodium uncinatum*, *Stylosanthes guianensis* and *Macroptilium atropurpureum* on

intake digestibility, outflow rates, nitrogen retention and live weight gain in lambs, 69 (1997) 187

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover ad libitum, 69 (1997) 233

Feeding napier hay as supplement to sheep given poor quality natural pasture hay: effects of level of napier hay supplement and inclusion of urea in the basal diet on intake and digestibility, 63 (1996) 123

Nutritional evaluation of diets. Simulation model of digestion and passage of nutrients through the rumen-reticulum, 68 (1997) 259

Nutritive value of indigenous browse in Africa in relation to the needs of wild ungulates, 69 (1997) 143

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

Recent research on forage utilization by ruminant livestock in South Africa, 69 (1997) 103

The effect of feeding level on intake and digestibility of Rhodes grass (*Chloris gayana*, cv Kunth) by dairy cows, 66 (1997) 181

The effect of infusion of putrescine and gamma amino butyric acid on the intake of steers offered grass silage containing three levels of lactic acid, 66 (1997) 15

The effect of intraruminal infusions of amines and gamma amino butyric acid on rumen fermentation parameters and food intake of steers offered grass silage, 63 (1996) 35

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

The effect of protein supplement source or supply pattern on the intake, digestibility, rumen kinetics, nitrogen utilisation and growth of Ethiopian Menz sheep fed teff straw, 64 (1996) 11

The effect of spreading sodium bicarbonate over the surface of grass silage on the intake of grass silages by beef cattle, 67 (1997) 61

The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw, 65 (1997) 79

The use of groundnut hay as a supplement for sheep consuming poor quality natural pasture hay, 69 (1997) 17

#### Intake level

Rumen contents and ruminal and faecal particle size distribution in steers fed a mixed diet at three amounts of intake, 64 (1997) 143

#### Intake prediction

The use of Near Infrared Reflectance Spectroscopy on dried samples to predict biological parameters of grass silage, 68 (1997) 235

#### Interannual variations

Interannual variations of nutrient concentrations in botanical fractions from extensively managed grasslands, 66 (1997) 257

#### Intercropping

Nutritional improvement of maize silage for dairying: mixed-crop silages from sole and intercropped legumes and a long season variety of maize. 1. Biomass yield and nutritive value, 69 (1997) 241

#### Intestinal digestibility

The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen, 65 (1997) 265

#### Intestinal digestion

Variation in ruminal degradation and intestinal digestion of animal byproduct proteins, 63 (1996) 1

#### In vitro

Appropriate methods for the evaluation of tropical feeds for ruminants, 69 (1997) 53

Degradation of methionine by rumen contents in vitro and efficiency of its protection, 67 (1997) 339

Description of gas production profiles with a three-phasic model, 66 (1997) 31

Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen fluid, 67 (1997) 37

#### **In vitro gas production**

Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus, 69 (1997) 219

Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*) by near-infrared reflectance spectroscopy using spectrally-structured sample populations, 69 (1997) 281

Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro, 69 (1997) 67

The prediction of dry matter intake of temperate and tropical roughages from in vitro digestibility/gas-production data, and the dry matter intake and in vitro digestibility of African roughages in relation to ruminant liveweight gain, 69 (1997) 131

Use of an in vitro gas production method to investigate interactions between veld hay and Napier hay or groundnut hay supplements, 67 (1997) 265

#### **In vitro rumen nitrogen degradability**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

#### **In vitro rumen protein degradability**

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

#### **In vitro techniques**

Prediction of the feeding value of maize silages by chemical parameters, in vitro digestibility and NIRS, 66 (1997) 211

#### **In vivo**

Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro, 69 (1997) 67

#### **In vivo digestibility**

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

#### ***Jatropha curcas***

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

#### **Karl Fischer titration**

A comparison of methods for the determination of dry matter concentration in grass silage including an extraction method for water, 68 (1997) 67

#### **Kinetics**

Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics, 67 (1997) 19

#### **Kinetics of fermentation**

The prediction of dry matter intake of temperate and tropical roughages from in vitro digestibility/gas-production data, and the dry matter intake and in vitro digestibility of African roughages in relation to ruminant liveweight gain, 69 (1997) 131

#### **Kudzu (*Pueraria lobata*)**

Evaluation of the nutritive value of kudzu (*Pueraria lobata*) as a feed for ruminants, 68 (1997) 183

#### **Lablab**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

#### **Lactic acid**

The effect of infusion of putrescine and gamma amino butyric acid on the intake of steers offered grass silage containing three levels of lactic acid, 66 (1997) 15

**Lactic acid bacteria**

A method of making good quality silage from direct cut alfalfa by spraying previously fermented juice, 66 (1997) 129

**Lag phase**

The prediction of dry matter intake of temperate and tropical roughages from in vitro digestibility/gas-production data, and the dry matter intake and in vitro digestibility of African roughages in relation to ruminant liveweight gain, 69 (1997) 131

**Lamb performance**

Growth performance of lambs fed mixed diets containing halophyte ingredients, 63 (1996) 137

**Lambs**

Effect of supplementing veld hay with tropical legumes *Desmodium uncinatum*, *Stylosanthes guianensis* and *Macroptilium atropurpureum* on intake digestibility, outflow rates, nitrogen retention and live weight gain in lambs, 69 (1997) 187

The nutritive value of canola, heat-treated canola and fish meals as protein supplements for lambs fed grass silage, 68 (1997) 139

**Layer**

Toxicity, tissue accumulation and residue in egg and excreta of copper in laying hens, 67 (1997) 49

**Leaf protein**

The nutritive value for rats and chicks of unextracted and defatted leaf protein concentrates from red clover and Italian ryegrass, 63 (1996) 297

**Leaves**

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

**Lectin**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of Jatropa meal, 67 (1997) 223

**Leghorn and broiler chickens**

Effects of enzyme supplementation and irradiation of rice bran on the performance of growing Leghorn and broiler chickens, 66 (1997) 47

**Legume**

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

The effect of level of inclusion of the legume *Desmodium uncinatum* and the use of molasses or ground maize as additives on the chemical composition of grass- and maize-legume silages, 68 (1997) 295

**Legume forage**

The role of legume forages as supplements to low quality roughages — ILRI experience, 69 (1997) 27

**Legumes**

Digestibility of amino acids in protein rich tropical feeds for ruminants estimated with the mobile bag technique, 69 (1997) 271

Promising tropical grasses and legumes as feed resources in Central Tanzania. II. In sacco rumen degradation characteristics of four grasses and legumes, 69 (1997) 341

**Legume straws**

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

**Legume supplements**

Effect of supplementing veld hay with tropical legumes *Desmodium uncinatum*, *Stylosanthes guianensis* and *Macroptilium atropurpureum* on intake digestibility, outflow rates, nitrogen retention and live weight gain in lambs, 69 (1997) 187

**Leucaena**

*Leucaena* forage analysis using near infrared reflectance spectroscopy, 64 (1996) 1

Methods of field preservation and selection of sample tissue for condensed tannin analysis in *Leucaena* species, 68 (1997) 353

**Leucaena**

Effects of dietary inclusion of leucaena leaf meal with and without ferrous sulphate on the

digestibility of dietary components and growth of pigs over the weight range 20-60 kg, 65 (1997) 45

#### ***Leucaena pallida***

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

#### **Lignin**

Anatomical and histological factors affecting the ruminal degradation of stem tissues in *Bothriochloa* species, 67 (1997) 299

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermipora* and *Cyathus stercoreus*, 63 (1996) 305

Carbohydrate and lignin contents of plant materials used in animal feeding, 67 (1997) 319

#### **Lime**

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

#### **Linseed**

Influence of dietary supplementation with linseed and vitamin E on fatty acids,  $\alpha$ -tocopherol and lipid peroxidation in muscles of broiler chicks, 66 (1997) 149

#### **Liquid marker**

Evaluation of praseodymium as a liquid marker in rumen turnover studies, 63 (1996) 201

#### **Liquid potato feed**

Assessment using sheep of the nutritive value of liquid potato feed and partially fried potato chips (french fries), 64 (1997) 243

#### **Liver function**

Toxicity, tissue accumulation and residue in egg and excreta of copper in laying hens, 67 (1997) 49

#### **Liveweight**

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

#### **Live weight gain**

Effect of supplementing veld hay with tropical legumes *Desmodium uncinatum*, *Stylosanthes guianensis* and *Macroptilium atropurpureum* on intake digestibility, outflow rates, nitrogen retention and live weight gain in lambs, 69 (1997) 187

#### **Liveweight gain**

Supplementary feeding value of urea-treated olive cake when fed to growing Awassi lambs, 64 (1997) 287

#### **Low-molecular weight sugars**

Carbohydrate and lignin contents of plant materials used in animal feeding, 67 (1997) 319

#### **Lucerne**

In-situ disappearance and content of *p*-coumaric and ferulic acid in lucerne from various vegetative stages, 67 (1997) 141

#### **Lucerne hay**

Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed lucerne hay-based diets, 68 (1997) 101

#### **Lupin seeds**

The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed carbohydrates and dietary protein in young pigs, 67 (1997) 115

The nutritive value for ruminants of lupin seeds from determinate plants and their replacement of soya bean meal in diets for young growing cattle, 68 (1997) 11

#### **Maize**

In situ degradation kinetics of maize hybrid stalks, 68 (1997) 77

Influence of genotype and stage of maturity of maize on rate of ruminal starch degradation, 68 (1997) 25

Nutritional improvement of maize silage for dairying: mixed crop silages from sole and intercropped legumes and a long season variety of maize. 2. Ensilage, 69 (1997) 263

The effect of level of inclusion of the legume *Desmodium uncinatum* and the use of molasses or ground maize as additives on the chemical composition of grass- and maize-legume silages, 68 (1997) 295

#### **Maize-legume silage**

Nutritional improvement of maize silage for dairying: mixed-crop silages from sole and intercropped legumes and a long season variety of maize. 1. Biomass yield and nutritive value, 69 (1997) 241

**Maize silage**

Prediction of the feeding value of maize silages by chemical parameters, *in vitro* digestibility and NIRS, 66 (1997) 211

**Maize stover**

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover *ad libitum*, 69 (1997) 233

**Manipulation of milk fatty acids**

Effect of feeding different fat supplements on the fatty acid composition of goat milk, 66 (1997) 159

**Mathematical models**

Application of non-linear models in the description of *in situ* degradation profiles of the elephant grass (*Pennisetum purpureum* Schum., Mineiro variety), 66 (1997) 197

**Maturity**

Influence of genotype and stage of maturity of maize on rate of ruminal starch degradation, 68 (1997) 25

**Meal**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

**Mean retention time**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Mediterranean area**

Forage quality of native pastures in a Mediterranean area, 69 (1997) 315

**Metabolism**

Effects of a probiotic yeast in lactating ruminants: interaction with dietary nitrogen level, 63 (1996) 149

**Methionine**

Degradation of methionine by rumen contents *in vitro* and efficiency of its protection, 67 (1997) 339

Influence of duodenal infusion of L-methionine and L-methionine-dl-sulfoxide on amino acid concentration and duodenal electrical activity in Friesian calves, 66 (1997) 75

**Methionine sulfoxide**

Influence of duodenal infusion of L-methionine and L-methionine-dl-sulfoxide on amino acid concentration and duodenal electrical activity in Friesian calves, 66 (1997) 75

**Methods**

A comparison of four methods of estimating the rate and extent of cell wall degradation in grass silages, 63 (1996) 99

**Microbes**

Effects of diphenyliodonium chloride on proteolysis and leucine metabolism by rumen microorganisms, 65 (1997) 139

**Microbial biomass**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Microbial non-ammonia-nitrogen**

Use of near-infrared reflectance spectroscopy for the estimation of the microbial portion of non-ammonia-nitrogen in the duodenum of dairy cows, 68 (1997) 225

**Microbial-N yield**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Microscopy**

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermispora* and *Cyathus stercoreus*, 63 (1996) 305

**Mid lactation**

Effects of feeding propylene glycol to mid-lactating dairy cows, 64 (1996) 43

**Milk**

Purine derivatives excretion in lactating ewes fed straw diets with different levels of fish meal, 63 (1996) 341



**Milk composition**

Effects of niacin on milk yield, milk composition, and blood components of dairy cows in hot weather, 64 (1996) 53

**Milk fatty acids**

Evaluation of a seal by-product meal as a feed-stuff for dairy cows, 63 (1996) 51

**Milk flavour**

Evaluation of a seal by-product meal as a feed-stuff for dairy cows, 63 (1996) 51

**Milk urea**

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

**Milk yield**

Effects of a probiotic yeast in lactating ruminants: interaction with dietary nitrogen level, 63 (1996) 149

Effects of niacin on milk yield, milk composition, and blood components of dairy cows in hot weather, 64 (1996) 53

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

**Millet**

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

**Mineral balance**

Mineral balance of rats fed on diets containing sweet lupin (*Lupinus angustifolius* L.) or its fractions, 65 (1997) 231

**Mineral composition**

Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria, 68 (1997) 153

**Mineral content**

Interannual variations of nutrient concentrations in botanical fractions from extensively managed grasslands, 66 (1997) 257

**Mixed crop silage**

Nutritional improvement of maize silage for dairying: mixed crop silages from sole and intercropped legumes and a long season variety of maize, 2. Ensilage, 69 (1997) 263

**Mixed diet**

Rumen contents and ruminal and faecal particle size distribution in steers fed a mixed diet at three amounts of intake, 64 (1997) 143

**Mixed silages**

The effect of level of inclusion of the legume *Desmodium uncinatum* and the use of molasses or ground maize as additives on the chemical composition of grass- and maize-legume silages, 68 (1997) 295

**MMC**

Influence of duodenal infusion of L-methionine and L-methionine-dl-sulfoxide on amino acid concentration and duodenal electrical activity in Friesian calves, 66 (1997) 75

**Modelling**

Description of gas production profiles with a three-phasic model, 66 (1997) 31

**Models**

The influence of elephant-grass (*Pennisetum purpureum* Schum., Minciro variety) growth on the nutrient kinetics in the rumen, 67 (1997) 151

**Moist heat treatment**

A comparative study on amino acid availability of moist heated canola meal for poultry vs. ruminants, 63 (1996) 179

**Molybdenum**

The effect of dietary molybdenum supplementation on tissue copper concentrations, mohair fibre and carcass characteristics of growing Angora goats, 67 (1997) 83

**Monensin**

The effects of short-term and long-term monensin supplementation, and its subsequent withdrawal on digestion in sheep, 65 (1997) 113

**Monosaccharide components**

Digestibility by sheep of direct cut alfalfa silage made with ozonated cotton stalks, 67 (1997) 311

**Monosaccharides**

Colonization of crop residues by white-rot fungi: cell wall monosaccharides, phenolic acids, ruminal fermentation characteristics and digestibility of cell wall fiber components in vitro, 63 (1996) 273

***Moringa oleifera***

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

**Multiphasic model**

Multiphasic analysis of gas production kinetics for in vitro fermentation of ruminant feeds, 64 (1996) 77

**Multipurpose trees**

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

Recent work on the establishment, production and utilization of multipurpose trees as a feed resource in Zimbabwe, 69 (1997) 1

The role of legume forages as supplements to low quality roughages — ILRI experience, 69 (1997) 27

**Multipurpose tree species**

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

**Mung beans**

Mung beans (*Phaseolus aureus*) for finishing pigs, 66 (1997) 297

**Mycotoxins**

Mycotoxins, 69 (1997) 155

Prevention of aflatoxicosis in farm animals by means of hydrated sodium calcium aluminosilicate addition to feedstuffs: a review, 65 (1997) 197

**<sup>15</sup>N**

Incorporation of recycled urea-N into ruminal bacteria flowing to the small intestine of dairy cows fed a high-grain or high-forage diet, 68 (1997) 327

**NDF**

Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria, 68 (1997) 153

**Near infrared reflectance spectroscopy**

*Leucaena* forage analysis using near infrared reflectance spectroscopy, 64 (1996) 1

Near infrared calibration of chemical constituents of *Cajanus cajan* (pigeon pea) used as forage, 69 (1997) 201

The use of Near Infrared Reflectance Spectroscopy on dried samples to predict biological parameters of grass silage, 68 (1997) 235

**Near-infrared reflectance spectroscopy**

Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*) by near-infrared reflectance spectroscopy using spectrally-structured sample populations, 69 (1997) 281

**Near-infrared spectrometry**

Use of near-infrared reflectance spectroscopy for the estimation of the microbial portion of non-ammonia-nitrogen in the duodenum of dairy cows, 68 (1997) 225

**Nepal**

Indigenous knowledge of the feeding value of tree fodder, 67 (1997) 97

Indigenous knowledge of the feeding value of tree fodder, 68 (1997) 37

**Net energy**

An analysis of methods for the utilisation of net energy concepts to improve the accuracy of feed evaluation in diets for pigs, 68 (1997) 89

**Neutral detergent fiber**

Digestion kinetics of neutral detergent fiber and chemical composition within some selected by-product feedstuffs, 67 (1997) 127

**n-3 fatty acid**

Influence of dietary supplementation with linseed and vitamin E on fatty acids,  $\alpha$ -tocopherol and lipid peroxidation in muscles of broiler chicks, 66 (1997) 149

**Niacin**

Effects of niacin on milk yield, milk composition, and blood components of dairy cows in hot weather, 64 (1996) 53

**NIRS**

Prediction of the feeding value of maize silages by chemical parameters, in vitro digestibility and NIRS, 66 (1997) 211

The use of Near Infrared Reflectance Spectroscopy on dried samples to predict biological parameters of grass silage, 68 (1997) 235

### Nitrogen

Browse foliage and annual legume pods as supplements to wheat straw for sheep, 66 (1997) 85

Digestibility of amino acids in protein rich tropical feeds for ruminants estimated with the mobile bag technique, 69 (1997) 271

Effect of ammonia and urea treatments on digestibility and nitrogen content of dehydrated lucerne, 67 (1997) 69

Effects of the synchronization of the rate of carbohydrates and nitrogen release of the concentrate on rumen fermentation, plasma metabolites and insulin, in the dry pregnant goat, 63 (1996) 163

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

The effect of stage of harvest on the process of digestion in cattle fed winter oats indoors. II. Nitrogen digestion and microbial protein synthesis, 63 (1996) 245

### Nitrogen balance

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

### Nitrogen fertilization

Digestion of fresh perennial ryegrass fertilized at two levels of nitrogen by lactating dairy cows, 64 (1997) 155

### Nitrogen metabolism

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover ad libitum, 69 (1997) 233

### Nitrogen retention

Intake, digestion, and nitrogen balance of sheep fed shrub foliage and medic pods as a supplement to wheat straw, 65 (1997) 183

Nitrogen retention in pigs given diets containing cottonseed meal or soybean meal, 67 (1997) 205

### Nitrogen utilization

Grass maturity effects on cattle fed silage-based diets. 1. Organic matter digestion, rumen fermentation and nitrogen utilization, 67 (1997) 1

### NMR

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermispora* and *Cyathus stercoreus*, 63 (1996) 305

### Non-starch polysaccharides

The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed carbohydrates and dietary protein in young pigs, 67 (1997) 115

### Nonstructural carbohydrate

Rumen availabilities of nonstructural carbohydrate and protein estimated from in situ incubation of ingredients versus diets, 63 (1996) 257

### Northern Nigeria

Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria, 68 (1997) 153

### Nutrient recovery

Nutrient conservation of baled hay by sprayer application of feed grade fat with or without barn storage, 65 (1997) 1

### Nutrient retention

Comparative response of broiler chicks to a high fibre diet supplemented with four antibiotics, 64 (1997) 337

### Nutrients

Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves, 63 (1996) 211

**Nutrient utilization**

Effect of borage meal on nutrient digestibility and performance of ruminants and pigs, 64 (1997) 273

Nutrient utilization and rumen fermentation pattern in crossbred cattle fed different planes of nutrition supplemented with urea molasses mineral block, 64 (1997) 101

**Nutrition**

An analysis of methods for the utilisation of net energy concepts to improve the accuracy of feed evaluation in diets for pigs, 68 (1997) 89

Changes in extract viscosity, amino acid content, and soluble and insoluble  $\beta$ -glucan and dietary fibre content of barley during different high moisture storage conditions, 64 (1997) 257

**Nutritional value**

Nutritional evaluation of grain amaranth (*Amaranthus hypochondriacus*) in broiler diets, 63 (1996) 323

**Nutritive value**

Effects of age and season on growth and nutritive value of Rhodes grass (*Chloris gayana* cv. Kunth), 65 (1997) 87

Effects of supplementation with fish meal or fish protein hydrolysate on growth, nutrient digestibility and rumen fermentation of growing cattle fed grass silage, 68 (1997) 307

Evaluation of the nutritive value of kudzu (*Pueraria lobata*) as a feed for ruminants, 68 (1997) 183

Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil by-products as roughages for sheep feeding, 68 (1997) 287

Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*) by near-infrared reflectance spectroscopy using spectrally-structured sample populations, 69 (1997) 281

Recent research on forage utilization by ruminant livestock in South Africa, 69 (1997) 103

The evaluation and enhancement of the nutritive value of yellow-, green- and brown-seeded

pea cultivars for unpelleted diets given to broiler chickens, 63 (1996) 9

**Nylon bag**

Appropriate methods for the evaluation of tropical feeds for ruminants, 69 (1997) 53

Chemical composition and degradability of *Brachystegia spiciformis* (musasa) leaves and stems harvested over 4 months from three sites in Zimbabwe, 69 (1997) 179

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

**Old World bluestem**

Anatomical and histological factors affecting the ruminal degradation of stem tissues in *Bothriochloa* species, 67 (1997) 299

**Oligonucleotide probe**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Oligosaccharides**

The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed carbohydrates and dietary protein in young pigs, 67 (1997) 115

**Omasum**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

**Orange peel**

Ruminal digestion kinetics of citrus peel, 68 (1997) 247

**Organic matter**

In sacco degradation characteristics of organic matter, neutral detergent fibre and crude protein of fresh grass fertilized with different amounts of nitrogen, 63 (1996) 63

Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro analyses, 68 (1997) 277

**Organic matter digestibility**

Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, picecolic acid and polyethylene glycol on in vitro organic matter digestibility, 69 (1997) 207

**Organic matter digestibility (OMD)**

Effect of urea treatment and diet composition on, and prediction of nutritive value of rice straw of different cultivars, 68 (1997) 165

**Organic matter digestibility prediction**

The use of Near Infrared Reflectance Spectroscopy on dried samples to predict biological parameters of grass silage, 68 (1997) 235

***Oryza sativa***

Effect of silica on the colonization of rice straw by ruminal bacteria, 65 (1997) 165

**Oxidative stability**

Influence of oilseeds in combination with vitamin E supplementation in the diet on backfat quality of pigs, 64 (1997) 91

**Oxidised oil**

The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish muscle, 65 (1997) 35

**Ozonated cotton stalks**

Digestibility by sheep of direct cut alfalfa silage made with ozonated cotton stalks, 67 (1997) 311

**Palatability**

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

**Pancreas**

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

**Partially fried chips**

Assessment using sheep of the nutritive value of liquid potato feed and partially fried potato chips (french fries), 64 (1997) 243

**Particle size**

Effect of a sepiolite product on pellet durability in pig diets differing in particle size and in broiler starter and finisher diets, 63 (1996) 25

Effects of calcium source, particle size and time on in-vitro calcium solubility of some indigenous Nigerian mineral ingredients for poultry diets, 65 (1997) 293

Rumen contents and ruminal and faecal particle size distribution in steers fed a mixed diet at three amounts of intake, 64 (1997) 143

Use of a multi-exponential model to assess the effect of fermentation in the reticulorumen on particle fragmentability as simulated from artificially macerating leaf and stem fractions of two tropical grasses, 66 (1997) 111

**Partitioning factor**

The prediction of dry matter intake of temperate and tropical roughages from in vitro digestibility/gas-production data, and the dry matter intake and in vitro digestibility of African roughages in relation to ruminant liveweight gain, 69 (1997) 131

**Passage**

Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics, 67 (1997) 19

**Pasture**

Forage quality of native pastures in a Mediterranean area, 69 (1997) 315

**Pasture evaluation**

Recent research on forage utilization by ruminant livestock in South Africa, 69 (1997) 103

**Pea cultivar**

The evaluation and enhancement of the nutritive value of yellow-, green- and brown-seeded pea cultivars for unpelleted diets given to broiler chickens, 63 (1996) 9

**PEG**

Nutritive evaluation of some browse species, 67 (1997) 181

**Pelleting**

Effect of expander conditioning and/or pelleting of a diet containing tapioca, pea and soybean meal on the total tract digestibility in growing pigs, 66 (1997) 289

Physical quality of pelleted animal feed. 2. contribution of processes and its conditions, 64 (1997) 173

#### **Pellet quality**

Effect of a sepiolite product on pellet durability in pig diets differing in particle size and in broiler starter and finisher diets, 63 (1996) 25

Physical quality of pelleted animal feed. 2. contribution of processes and its conditions, 64 (1997) 173

#### ***Pennisetum clandestinum***

Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*) by near-infrared reflectance spectroscopy using spectrally-structured sample populations, 69 (1997) 281

#### **Pentosanase**

Effects of gastric pH on the activity of exogenous pentosanase and the effect of pentosanase supplementation of the diet on the performance of growing-finishing pigs, 63 (1996) 187

#### **Peppermint**

Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil by-products as roughages for sheep feeding, 68 (1997) 287

#### **Perennial peanut**

Effects of replacement of maize with dried leaves of sweet potato (*Hypomoea batatas*) and perennial peanuts (*Arachis glabrata* Benth) on the growth performance of finishing broilers, 66 (1997) 283

#### **Perennial ryegrass**

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

#### **Performance**

Effect of the dietary inclusion of the growth promoter avoparcin on the performance and carcass characteristics of growing quail, 65 (1997) 287

Effects of enzyme supplementation and irradiation of rice bran on the performance of growing Leghorn and broiler chickens, 66 (1997) 47

Toxicity, tissue accumulation and residue in egg and excreta of copper in laying hens, 67 (1997) 49

#### **Phenolic acids**

Colonization of crop residues by white-rot fungi: cell wall monosaccharides, phenolic acids, ruminal fermentation characteristics and digestibility of cell wall fiber components in vitro, 63 (1996) 273

#### **Phenolic compounds**

Anatomical and histological factors affecting the ruminal degradation of stem tissues in *Bothriochloa* species, 67 (1997) 299

#### **Phenolics**

In-situ disappearance and content of *p*-coumaric and ferulic acid in lucerne from various vegetative stages, 67 (1997) 141

Nutritive evaluation of some browse species, 67 (1997) 181

#### **Phosphorus**

The bio-availability of phosphorus from feed phosphates for broilers as influenced by bio-assay method, dietary Ca-level and feed form, 69 (1997) 329

#### **Physical structure**

Effects of calcium source, particle size and time on in-vitro calcium solubility of some indigenous Nigerian mineral ingredients for poultry diets, 65 (1997) 293

#### **Phytate**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

#### **Pig**

Prediction of the total tract digestibility of energy in feedstuffs and pig diets by in vitro analyses, 68 (1997) 277

#### **Piglet**

Inclusion of sugar-beet pulp and change of protein source in the diet of the weaned piglet and their effects on digestive performance and enzymatic activities, 66 (1997) 1

**Piglets**

The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

**Pigs**

An analysis of methods for the utilisation of net energy concepts to improve the accuracy of feed evaluation in diets for pigs, 68 (1997) 89

Digestibility of dried and toasted peas in pigs.

1. Ileal and total tract digestibilities of carbohydrates, 64 (1997) 293

Digestibility of dried and toasted peas in pigs.

2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

Effect of expander conditioning and/or pelleting of a diet containing tapioca, pea and soybean meal on the total tract digestibility in growing pigs, 66 (1997) 289

Effects of dietary inclusion of leucaena leaf meal with and without ferrous sulphate on the digestibility of dietary components and growth of pigs over the weight range 20-60 kg, 65 (1997) 45

Effects of gastric pH on the activity of exogenous pentosanase and the effect of pentosanase supplementation of the diet on the performance of growing-finishing pigs, 63 (1996) 187

Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition, 66 (1997) 97

Influence of oilseeds in combination with vitamin E supplementation in the diet on backfat quality of pigs, 64 (1997) 91

The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions, 67 (1997) 213

The influence of  $\alpha$ -galactosidase supplementation on the ileal digestibility of lupin seed carbohydrates and dietary protein in young pigs, 67 (1997) 115

**Pipecolic acid**

Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, pipecolic acid and polyethylene glycol on in vitro organic matter digestibility, 69 (1997) 207

**Pisum sativum**

Digestibility of dried and toasted peas in pigs.

1. Ileal and total tract digestibilities of carbohydrates, 64 (1997) 293

Digestibility of dried and toasted peas in pigs.

2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

**Plane of nutrition**

Nutrient utilization and rumen fermentation pattern in crossbred cattle fed different planes of nutrition supplemented with urea molasses mineral block, 64 (1997) 101

**Plant materials**

Carbohydrate and lignin contents of plant materials used in animal feeding, 67 (1997) 319

**Plasma characteristics**

Effects of the synchronization of the rate of carbohydrates and nitrogen release of the concentrate on rumen fermentation, plasma metabolites and insulin, in the dry pregnant goat, 63 (1996) 163

**Plasma urea**

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

**Polyethylene glycol**

Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, pipecolic acid and polyethylene glycol on in vitro organic matter digestibility, 69 (1997) 207

**Polyethylene glycol (PEG)**

Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus, 69 (1997) 219

**Polyphenolics**

Chemical composition and relationship to in vitro gas production of Zimbabwean browsable indigenous tree species, 69 (1997) 121

**Polysaccharides**

Carbohydrate and lignin contents of plant materials used in animal feeding, 67 (1997) 319

**Poultry**

A comparative study on amino acid availability of moist heated canola meal for poultry vs. ruminants, 63 (1996) 179

**Poultry feeding**

Use of cane condensed molasses solubles in feeding broilers, 67 (1997) 253

**Poultry litter**

The feasibility of replacement of grain by tapioca in diets for growing-fattening cattle, 64 (1997) 133

**Poultry meat**

Influence of dietary supplementation with linseed and vitamin E on fatty acids,  $\alpha$ -tocopherol and lipid peroxidation in muscles of broiler chicks, 66 (1997) 149

**Poultry offal**

The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions, 67 (1997) 213

**Praseodymium**

Evaluation of praseodymium as a liquid marker in rumen turnover studies, 63 (1996) 201

**Prediction of dry matter intake**

The prediction of dry matter intake of temperate and tropical roughages from in vitro digestibility/gas-production data, and the dry matter intake and in vitro digestibility of African roughages in relation to ruminant liveweight gain, 69 (1997) 131

**Prediction of liveweight gain**

The prediction of dry matter intake of temperate and tropical roughages from in vitro digestibility/gas-production data, and the dry matter intake and in vitro digestibility of African roughages in relation to ruminant liveweight gain, 69 (1997) 131

**Pre-ensiling physical constitution**

Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria, 68 (1997) 153

**Proanthocyanidins**

Chemical composition and relationship to in vitro gas production of Zimbabwean browsable indigenous tree species, 69 (1997) 121

**Probiotic yeast**

Effects of a probiotic yeast in lactating ruminants: interaction with dietary nitrogen level, 63 (1996) 149

**Propylene glycol**

Effects of feeding propylene glycol to mid-lactating dairy cows, 64 (1996) 43

**Protease**

Effects of protease inhibitors on degradation of  $H_4[^{14}C]$ -casein by ruminal microorganisms, 64 (1997) 113

**Protection**

Degradation of methionine by rumen contents in vitro and efficiency of its protection, 67 (1997) 339

In-vitro assessment of fat supplements for ruminants, 64 (1997) 127

**Protein**

Browse foliage and annual legume pods as supplements to wheat straw for sheep, 66 (1997) 85

Digestibility of dried and toasted peas in pigs. 2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

Influence of dietary rumen-degradable protein on bacterial growth in the rumen of sheep receiving different energy sources, 63 (1996) 333

Intake, digestion, and nitrogen balance of sheep fed shrub foliage and medic pods as a supplement to wheat straw, 65 (1997) 183

Rumen availabilities of nonstructural carbohydrate and protein estimated from in situ incubation of ingredients versus diets, 63 (1996) 257



The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen, 65 (1997) 265

#### **Protein degradability**

Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps, 69 (1997) 289

#### **Protein digestion**

Digestion of fresh perennial ryegrass fertilized at two levels of nitrogen by lactating dairy cows, 64 (1997) 155

#### **Protein meals**

The catalytic effect of supplementation of protein meals on utilization of rice straw-poultry droppings-rice bran diet in buffaloes, 63 (1996) 229

#### **Protein-rich supplements**

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover ad libitum, 69 (1997) 233

#### **Protein source**

Effect of dietary protein source on performances and rumen characteristics of dairy cows, 68 (1997) 339

Inclusion of sugar-beet pulp and change of protein source in the diet of the weaned piglet and their effects on digestive performance and enzymatic activities, 66 (1997) 1

#### **Protein supplementation**

The effect of nitrogen fertilization level and protein supplementation on herbage intake, feeding behaviour and digestion in grazing dairy cows, 66 (1997) 165

The nutritive value of canola, heat-treated canola and fish meals as protein supplements for lambs fed grass silage, 68 (1997) 139

#### **Protein—swine**

Statistical evaluation of the discrepancy between analysed and formulated crude protein content in commercial feed mixtures for pigs, 65 (1997) 207

#### **Protein value**

Appropriate methods for the evaluation of tropical feeds for ruminants, 69 (1997) 53

Nutritive value of raw and extruded pea-rape-seed blends for ruminants, 65 (1997) 59

#### **Proteolysis**

Effects of diphenyliodonium chloride on proteolysis and leucine metabolism by rumen microorganisms, 65 (1997) 139

#### **Protozoa**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

#### **Proximate analysis**

Use of cane condensed molasses solubles in feeding broilers, 67 (1997) 253

#### **Purine derivatives**

Purine derivatives excretion in lactating ewes fed straw diets with different levels of fish meal, 63 (1996) 341

#### **Quail**

Effect of the dietary inclusion of the growth promoter avoparcin on the performance and carcass characteristics of growing quail, 65 (1997) 287

#### **Quebracho tannins**

Assessment of the nutritive value of *Calliandra calothyrsus*: in sacco degradation and in vitro gas production in the presence of Quebracho tannins with or without Browse Plus, 69 (1997) 219

Quebracho tannins with or without Browse Plus (a commercial preparation of polyethylene glycol) in sheep diets: effect on digestibility of nutrients in vivo and degradation of grass hay in sacco and in vitro, 69 (1997) 67

**Quinoa germ**

Effect of dietary inclusion of quinoa on broiler growth performance, 65 (1997) 5

**Quinoa grain**

Effect of dietary inclusion of quinoa on broiler growth performance, 65 (1997) 5

**Rabbit**

Prediction of the energy value of rabbit feeds varying widely in fibre content, 64 (1996) 61

**Rabbits**

Substitution of sugarbeet pulp for alfalfa hay in diets for growing rabbits, 65 (1997) 249

**Raffinose oligosaccharides**

The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

**Rate of passage**

Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215

**Rats**

Mineral balance of rats fed on diets containing sweet lupin (*Lupinus angustifolius* L.) or its fractions, 65 (1997) 231

**Recycled urea**

Incorporation of recycled urea-N into ruminal bacteria flowing to the small intestine of dairy cows fed a high-grain or high-forage diet, 68 (1997) 327

**Redgram**

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

**Red Sokoto goats**

Effects of graded levels of sun-dried cassava peels in supplement diets fed to Red Sokoto goats in first trimester of pregnancy, 67 (1997) 197

**Response surface analysis**

Response surface analyses of the associative effects of lucerne hay, wheat straw and maize gluten feed on growing lambs, 67 (1997) 279

**Rhodes grass**

Effects of age and season on growth and nutritive value of Rhodes grass (*Chloris gayana* cv. Kunth), 65 (1997) 87

The effect of feeding level on intake and digestibility of Rhodes grass (*Chloris gayana*, cv. Kunth) by dairy cows, 66 (1997) 181

**Rice bran**

Effects of enzyme supplementation and irradiation of rice bran on the performance of growing Leghorn and broiler chickens, 66 (1997) 47

**Rice straw**

Effect of silica on the colonization of rice straw by ruminal bacteria, 65 (1997) 165

The catalytic effect of supplementation of protein meals on utilization of rice straw-poultry droppings-rice bran diet in buffaloes, 63 (1996) 229

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

**Roughage to concentrate ratio**

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

**Rumen**

Application of non-linear models in the description of in situ degradation profiles of the elephant grass (*Pennisetum purpureum* Schum., Mineiro variety), 66 (1997) 197

Degradation of methionine by rumen contents in vitro and efficiency of its protection, 67 (1997) 339

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

Effect of fiber source and a yeast culture (*Saccharomyces cerevisiae*<sup>1026</sup>) on digestion and the environment in the rumen of cattle, 64 (1997) 327

Effects of diphenyliodonium chloride on proteolysis and leucine metabolism by rumen microorganisms, 65 (1997) 139

Influence of genotype and stage of maturity of maize on rate of ruminal starch degradation, 68 (1997) 25

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen fluid, 67 (1997) 37

Nutritional evaluation of diets. Simulation model of digestion and passage of nutrients through the rumen-reticulum, 68 (1997) 259

Nutritive value of raw and extruded pea-rapeseed blends for ruminants, 65 (1997) 59

Rumen contents and ruminal and faecal particle size distribution in steers fed a mixed diet at three amounts of intake, 64 (1997) 143

Studies on in situ degradation of feeds in the rumen: 1. Effect of species, bag mobility and incubation sequence on dry matter disappearance, 64 (1997) 227

The effects of short-term and long-term monensin supplementation, and its subsequent withdrawal on digestion in sheep, 65 (1997) 113

The influence of elephant-grass (*Pennisetum purpureum* Schum., Mineiro variety) growth on the nutrient kinetics in the rumen, 67 (1997) 151

The use of Ca salts of rape seed fatty acids to protect protein against degradation in the rumen, 65 (1997) 265

Use of a multi-exponential model to assess the effect of fermentation in the reticulorumen on particle fragmentability as simulated from artificially macerating leaf and stem fractions of two tropical grasses, 66 (1997) 111

#### Rumen bacteria

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

#### Rumen degradability

Studies on in situ degradation of feeds in the rumen: 2. The effect of bag numbers incubated and post-incubation processing of residues, 68 (1997) 115

#### Rumen-degradable protein

Influence of dietary rumen-degradable protein on bacterial growth in the rumen of sheep receiving different energy sources, 63 (1996) 333

#### Rumen degradation

In-vitro assessment of fat supplements for ruminants, 64 (1997) 127

The effect of fertiliser nitrogen on the solubility and rumen degradability of dry matter and nitrogen in wheat grain, 66 (1997) 247

#### Rumen fermentation

Effect of *Saccharomyces cerevisiae* or *Aspergillus oryzae* cultures and NDF level on parameters of ruminal fermentation, 63 (1996) 289

Effects of the synchronization of the rate of carbohydrates and nitrogen release of the concentrate on rumen fermentation, plasma metabolites and insulin, in the dry pregnant goat, 63 (1996) 163

Influence of dietary rumen-degradable protein on bacterial growth in the rumen of sheep receiving different energy sources, 63 (1996) 333

Nutrient utilization and rumen fermentation pattern in crossbred cattle fed different planes of nutrition supplemented with urea molasses mineral block, 64 (1997) 101

Rumen fermentation, bacterial and total volatile fatty acid (TVFA) production rates in cattle fed on urea-molasses-mineral block licks supplement, 65 (1997) 275

Rumen fermentation, nutrient flow to the duodenum and digestibility in bulls fed calcium soaps of rapeseed fatty acids and soya bean meal coated with calcium soaps, 69 (1997) 289

**Rumen manipulation**

Rumen manipulation for the improved utilization of tropical forages, 69 (1997) 91

**Rumen metabolism**

Assessment using sheep of the nutritive value of liquid potato feed and partially fried potato chips (french fries), 64 (1997) 243

**Rumen microorganisms**

Effects of protease inhibitors on degradation of  $H_2[^{14}C]$ -casein by ruminal microorganisms, 64 (1997) 113

The role of legume forages as supplements to low quality roughages — ILRI experience, 69 (1997) 27

**Rumen pH**

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

**Ruminal availability**

Rumen availabilities of nonstructural carbohydrate and protein estimated from in situ incubation of ingredients versus diets, 63 (1996) 257

**Ruminal characteristics**

Effect of dietary protein source on performances and rumen characteristics of dairy cows, 68 (1997) 339

**Ruminal degradation**

Variation in ruminal degradation and intestinal digestion of animal byproduct proteins, 63 (1996) 1

**Ruminal degradation kinetics**

In situ degradation kinetics of maize hybrid stalks, 68 (1997) 77

**Ruminal fermentation**

Digestion of fresh perennial ryegrass fertilized at two levels of nitrogen by lactating dairy cows, 64 (1997) 155

**Ruminal hydrogenation**

Effect of feeding different fat supplements on the fatty acid composition of goat milk, 66 (1997) 159

**Ruminal turnover**

Evaluation of praseodymium as a liquid marker in rumen turnover studies, 63 (1996) 201

**Ruminant**

Effect of *Saccharomyces cerevisiae* or *Aspergillus oryzae* cultures and NDF level on parameters of ruminal fermentation, 63 (1996) 289

Grass maturity effects on cattle fed silage-based diets. 1. Organic matter digestion, rumen fermentation and nitrogen utilization, 67 (1997) 1

Grass maturity effects on cattle fed silage-based diets. 2. Cell wall digestibility, digestion and passage kinetics, 67 (1997) 19

Rumen availabilities of nonstructural carbohydrate and protein estimated from in situ incubation of ingredients versus diets, 63 (1996) 257

**Ruminant production**

Recent work on the production and utilization of tree fodder in East Africa, 69 (1997) 39

**Ruminants**

A comparative study on amino acid availability of moist heated canola meal for poultry vs. ruminants, 63 (1996) 179

Dietary factors affecting entero—hepatic function of ruminants in the tropics, 69 (1997) 79

Effect of borage meal on nutrient digestibility and performance of ruminants and pigs, 64 (1997) 273

Mycotoxins, 69 (1997) 155

Nutritive value of indigenous browse in Africa in relation to the needs of wild ungulates, 69 (1997) 143

The effect of fertiliser nitrogen on the solubility and rumen degradability of dry matter and nitrogen in wheat grain, 66 (1997) 247

The effect of infusion of putrescine and gamma amino butyric acid on the intake of steers offered grass silage containing three levels of lactic acid, 66 (1997) 15

The effect of intraruminal infusions of amines and gamma amino butyric acid on rumen fermentation parameters and food intake of steers offered grass silage, 63 (1996) 35

The nutritive value for ruminants of lupin seeds from determinate plants and their replacement of soya bean meal in diets for young growing cattle, 68 (1997) 11

#### ***Saccharomyces cerevisiae***

Effect of *Saccharomyces cerevisiae* or *Aspergillus oryzae* cultures and NDF level on parameters of ruminal fermentation, 63 (1996) 289

#### ***Salicornia***

Growth performance of lambs fed mixed diets containing halophyte ingredients, 63 (1996) 137

#### **Salicornia meal**

Nutrient composition and feeding value of *Salicornia bigelovii* torr meal in broiler diets, 65 (1997) 257

#### **Salseed meal**

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

#### **Sample preservation**

Methods of field preservation and selection of sample tissue for condensed tannin analysis in *Leucaena* species, 68 (1997) 353

#### **Saponins**

Effect of dietary inclusion of quinoa on broiler growth performance, 65 (1997) 5

#### **Seal meal**

Evaluation of a seal by-product meal as a feed-stuff for dairy cows, 63 (1996) 51

#### **Season**

Effects of age and season on growth and nutritive value of Rhodes grass (*Chloris gayana* cv. Kunth), 65 (1997) 87

#### **Secondary plant compounds**

Recent work on the establishment, production and utilization of multipurpose trees as a feed resource in Zimbabwe, 69 (1997) 1

#### **Sepiolite**

Effect of a sepiolite product on pellet durability in pig diets differing in particle size and in broiler starter and finisher diets, 63 (1996) 25

#### ***Sesbania sesban***

Effect of multipurpose tree (MPT) supplements on ruminal ciliate protozoa, 67 (1997) 169

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

#### ***Sesbania* sp.**

The role of legume forages as supplements to low quality roughages — ILRI experience, 69 (1997) 27

#### **Sheep**

Assessment using sheep of the nutritive value of liquid potato feed and partially fried potato chips (french fries), 64 (1997) 243

Browse foliage and annual legume pods as supplements to wheat straw for sheep, 66 (1997) 85

Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed lucerne hay-based diets, 68 (1997) 101

Effect of high dietary zinc concentration and length of zinc feeding on feed intake and tissue zinc concentration in sheep, 66 (1997) 237

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover ad libitum, 69 (1997) 233

Estimation of the relative bioavailability of zinc from inorganic zinc sources for sheep, 66 (1997) 223

Feeding napier hay as supplement to sheep given poor quality natural pasture hay: effects of level of napier hay supplement and inclusion of urea in the basal diet on intake and digestibility, 63 (1996) 123

Influence of dietary rumen-degradable protein on bacterial growth in the rumen of sheep

receiving different energy sources, 63 (1996) 333

Intake, digestion, and nitrogen balance of sheep fed shrub foliage and medic pods as a supplement to wheat straw, 65 (1997) 183

Net flux of nutrients across splanchnic tissues in wethers consuming grass hay with or without corn and alfalfa, 66 (1997) 271

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

Peppermint (*Mentha piperita* Huds.) and basil (*Ocimum basilicum* L.) etheric oil by-products as roughages for sheep feeding, 68 (1997) 287

The effects of short-term and long-term monensin supplementation, and its subsequent withdrawal on digestion in sheep, 65 (1997) 113

The use of groundnut hay as a supplement for sheep consuming poor quality natural pasture hay, 69 (1997) 17

#### Shrublands

Determination of marker chromic oxide in faeces of grazing goats on Mediterranean shrublands by AAS, 67 (1997) 163

#### Shrubs

Browse foliage and annual legume pods as supplements to wheat straw for sheep, 66 (1997) 85

Fodder shrub and tree species in the Highlands of southern Mexico, 68 (1997) 213

Intake, digestion, and nitrogen balance of sheep fed shrub foliage and medic pods as a supplement to wheat straw, 65 (1997) 183

#### Silage

Effects of supplementation with fish meal or fish protein hydrolysate on growth, nutrient digestibility and rumen fermentation of growing cattle fed grass silage, 68 (1997) 307

Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria, 68 (1997) 153

Nutritional improvement of maize silage for dairying: mixed crop silages from sole and intercropped legumes and a long season variety of maize. 2. Ensilage, 69 (1997) 263

Nutritional improvement of maize silage for dairying: mixed-crop silages from sole and intercropped legumes and a long season variety of maize. 1. Biomass yield and nutritive value, 69 (1997) 241

The effect of infusion of putrescine and gamma amino butyric acid on the intake of steers offered grass silage containing three levels of lactic acid, 66 (1997) 15

The effect of intraruminal infusions of amines and gamma amino butyric acid on rumen fermentation parameters and food intake of steers offered grass silage, 63 (1996) 35

The rate and extent of cell-wall degradation in vitro for 40 silages varying in composition and digestibility, 63 (1996) 111

#### Silage additive

A method of making good quality silage from direct cut alfalfa by spraying previously fermented juice, 66 (1997) 129

Digestibility by sheep of direct cut alfalfa silage made with ozonated cotton stalks, 67 (1997) 311

#### Silage dry matter

A comparison of methods for the determination of dry matter concentration in grass silage including an extraction method for water, 68 (1997) 67

#### Simulation model

Nutritional evaluation of diets. Simulation model of digestion and passage of nutrients through the rumen-reticulum, 68 (1997) 259

#### Siratro

Chemical composition and dry matter degradability profiles of forage legumes *Cassia rotundifolia* cv. Wynn, *Lablab purpureus* cv. Highworth and *Macroptilium atropurpureum* cv. Siratro at 8 weeks of growth (pre-anthesis), 69 (1997) 167

**Small intestinal AA availability**

A comparative study on amino acid availability of moist heated canola meal for poultry vs. ruminants, 63 (1996) 179

**Sodium hydroxide**

In vivo digestibility of treated and untreated barley straw: results of direct and by-difference digestibility trials, 65 (1997) 129

**Solubility**

Effects of calcium source, particle size and time on in-vitro calcium solubility of some indigenous Nigerian mineral ingredients for poultry diets, 65 (1997) 293

***Sorghum alnum***

Ensiling quality of columbus grass (*Sorghum alnum*) grown in northern Nigeria, 68 (1997) 153

**Southern Mexico**

Fodder shrub and tree species in the Highlands of southern Mexico, 68 (1997) 213

**Soybean meal**

Nitrogen retention in pigs given diets containing cottonseed meal or soybean meal, 67 (1997) 205

**Species**

Forage quality of native pastures in a Mediterranean area, 69 (1997) 315

Studies on in situ degradation of feeds in the rumen: 1. Effect of species, bag mobility and incubation sequence on dry matter disappearance, 64 (1997) 227

**Splanchnic fluxes**

Net flux of nutrients across splanchnic tissues in wethers consuming grass hay with or without corn and alfalfa, 66 (1997) 231

**Stalk quality**

In situ degradation kinetics of maize hybrid stalks, 68 (1997) 77

**Starch**

Ileal and total tract digestibility in pigs of naked and hulled barley with different starch composition, 66 (1997) 97

Microbial amino acid yield from in vitro incubation of cellulose or starch with rumen fluid, 67 (1997) 37

The digestibility of carbohydrates, protein and fat in the small and large intestine of piglets fed non-supplemented and enzyme supplemented diets, 65 (1997) 15

**Starch digestion**

Influence of genotype and stage of maturity of maize on rate of ruminal starch degradation, 68 (1997) 25

**Straw**

Dried lemon as energetic supplement of diet based on urea-treated barley straw: effects on intake and digestibility in goats, 63 (1996) 89

***Suaeda***

Growth performance of lambs fed mixed diets containing halophyte ingredients, 63 (1996) 137

**Sugar-beet pulp**

Inclusion of sugar-beet pulp and change of protein source in the diet of the weaned piglet and their effects on digestive performance and enzymatic activities, 66 (1997) 1

**Sugarbeet Pulp**

Substitution of sugarbeet pulp for alfalfa hay in diets for growing rabbits, 65 (1997) 249

**Sugarcane molasses**

The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions, 67 (1997) 213

**Sulphur**

The effect of dietary molybdenum supplementation on tissue copper concentrations, mohair fibre and carcass characteristics of growing Angora goats, 67 (1997) 83

**Sun-dried cassava peel**

Effects of graded levels of sun-dried cassava peels in supplement diets fed to Red Sokoto goats in first trimester of pregnancy, 67 (1997) 197

**Supplementation**

Feeding napier hay as supplement to sheep given poor quality natural pasture hay: effects

of level of napier hay supplement and inclusion of urea in the basal diet on intake and digestibility, 63 (1996) 123

Recent research on forage utilization by ruminant livestock in South Africa, 69 (1997) 103

The catalytic effect of supplementation of protein meals on utilization of rice straw-poultry droppings-rice bran diet in buffaloes, 63 (1996) 229

The effect of supplementation of legume straws on utilisation of rice straw-poultry droppings-rice bran-fish meal based diet in buffaloes, 69 (1997) 305

The effects of supplementary Chinese milk vetch silage on the growth rate of cattle and their intake of ammoniated rice straw, 65 (1997) 79

The use of groundnut hay as a supplement for sheep consuming poor quality natural pasture hay, 69 (1997) 17

Use of an in vitro gas production method to investigate interactions between veld hay and Napier hay or groundnut hay supplements, 67 (1997) 265

#### Supplement diet

Effects of graded levels of sun-dried cassava peels in supplement diets fed to Red Sokoto goats in first trimester of pregnancy, 67 (1997) 197

#### Supplement source

The effect of protein supplement source or supply pattern on the intake, digestibility, rumen kinetics, nitrogen utilisation and growth of Ethiopian Menz sheep fed teff straw, 64 (1996) 11

#### Supply pattern

The effect of protein supplement source or supply pattern on the intake, digestibility, rumen kinetics, nitrogen utilisation and growth of Ethiopian Menz sheep fed teff straw, 64 (1996) 11

#### Sweet lupin seed meal and fractions

Mineral balance of rats fed on diets containing sweet lupin (*Lupinus angustifolius* L.) or its fractions, 65 (1997) 231

#### Sweet potato performance

Effects of replacement of maize with dried leaves of sweet potato (*Hypomoea batatas*) and perennial peanuts (*Arachis glabrata* Benth) on the growth performance of finishing broilers, 66 (1997) 283

#### Swine

Effect of borage meal on nutrient digestibility and performance of ruminants and pigs, 64 (1997) 273

#### Tannery fleshings

Enzymatic hydrolysis of tannery fleshings using chicken intestine proteases, 66 (1997) 139

#### Tannin

Effects of salseed (*Shorea robusta*) tannins, restricted feed intake and age on relative pancreas weight and activity of digestive enzymes in male broilers, 65 (1997) 215

#### Tannins

Assessment of the nutritive value of *Calliandra calothyrsus*: its chemical composition and the influence of tannins, picecolic acid and polyethylene glycol on in vitro organic matter digestibility, 69 (1997) 207

Effect of *Acacia cyanophylla* Lindl. foliage supply on intake and digestion by sheep fed lucerne hay-based diets, 68 (1997) 101

In vitro rumen apparent and true digestibilities of tannin-rich forages, 67 (1997) 245

#### Tanzania

Promising tropical grasses and legumes as feed resources in Central Tanzania. II. In sacco rumen degradation characteristics of four grasses and legumes, 69 (1997) 341

#### Tapioca

The feasibility of replacement of grain by tapioca in diets for growing-fattening cattle, 64 (1997) 133

#### Tayassu peccari

Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215



**Tayassu tajacu**

Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215

**TBARS**

Influence of dietary supplementation with linseed and vitamin E on fatty acids,  $\alpha$ -tocopherol and lipid peroxidation in muscles of broiler chicks, 66 (1997) 149

**Time**

Effects of calcium source, particle size and time on in-vitro calcium solubility of some indigenous Nigerian mineral ingredients for poultry diets, 65 (1997) 293

**Tissue**

Effect of high dietary zinc concentration and length of zinc feeding on feed intake and tissue zinc concentration in sheep, 66 (1997) 237

**Toasting**

Digestibility of dried and toasted peas in pigs.  
1. Ileal and total tract digestibilities of carbohydrates, 64 (1997) 293

Digestibility of dried and toasted peas in pigs.  
2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

**Tobacco**

Lime treatment of agricultural residues to improve rumen digestibility, 68 (1997) 195

 **$\alpha$ -Tocopherol**

The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish muscle, 65 (1997) 35

**Total tract digestibility**

Digestibility of dried and toasted peas in pigs.  
1. Ileal and total tract digestibilities of carbohydrates, 64 (1997) 293

Digestibility of dried and toasted peas in pigs.  
2. Ileal and total tract digestibilities of amino acids, protein and other nutrients, 64 (1997) 311

**Toxicity**

Toxicity, tissue accumulation and residue in egg and excreta of copper in laying hens, 67 (1997) 49

**Tree fodder**

Indigenous knowledge of the feeding value of tree fodder, 67 (1997) 97

Indigenous knowledge of the feeding value of tree fodder, 68 (1997) 37

**Tree fodders**

Recent work on the establishment, production and utilization of multipurpose trees as a feed resource in Zimbabwe, 69 (1997) 1

**Tree legumes**

Effects of supplementation with foliage from the tree legumes *Acacia angustissima*, *Cajanus cajan*, *Calliandra calothyrsus* and *Leucaena leucocephala* on feed intake, digestibility and nitrogen metabolism of sheep given maize stover ad libitum, 69 (1997) 233

**Trees**

Fodder shrub and tree species in the Highlands of southern Mexico, 68 (1997) 213

**Trichomes**

Effect of silica on the colonization of rice straw by ruminal bacteria, 65 (1997) 165

**Tropical**

Dietary factors affecting entero—hepatic function of ruminants in the tropics, 69 (1997) 79

Promising tropical grasses and legumes as feed resources in Central Tanzania. II. In sacco rumen degradation characteristics of four grasses and legumes, 69 (1997) 341

**Tropical forages**

Application of non-linear models in the description of in situ degradation profiles of the elephant grass (*Pennisetum purpureum* Schum., Mineiro variety), 66 (1997) 197

Rumen manipulation for the improved utilization of tropical forages, 69 (1997) 91

**Tropical grasses**

Prediction of the in vitro gas production dynamics of kikuyu grass (*Pennisetum clandestinum*)

by near-infrared reflectance spectroscopy using spectrally-structured sample populations, 69 (1997) 281

### **Tropical legumes**

Nutritional improvement of maize silage for dairying: mixed crop silages from sole and intercropped legumes and a long season variety of maize, 2. Ensilage, 69 (1997) 263

### **Tropics**

The ensiling of poultry offal with sugarcane molasses and *Lactobacillus* culture for feeding to growing/finishing pigs under tropical conditions, 67 (1997) 213

### **True digestibility**

In vitro rumen apparent and true digestibilities of tannin-rich forages, 67 (1997) 245

### **Trypsin inhibitor**

Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal, 67 (1997) 223

### **Turnover**

Description of gas production profiles with a three-phasic model, 66 (1997) 31

### **Turnover time**

Effect of concentrates in a hay diet on the contribution of anaerobic fungi, protozoa and bacteria to nitrogen in rumen and duodenal digesta in sheep, 64 (1997) 193

### **Ultrastructure**

Effect of silica on the colonization of rice straw by ruminal bacteria, 65 (1997) 165

### **Urea**

Feeding napier hay as supplement to sheep given poor quality natural pasture hay: effects of level of napier hay supplement and inclusion of urea in the basal diet on intake and digestibility, 63 (1996) 123

In vivo digestibility of treated and untreated barley straw: results of direct and by-difference digestibility trials, 65 (1997) 129

### **Urea molasses mineral block**

Nutrient utilization and rumen fermentation pattern in crossbred cattle fed different planes of

nutrition supplemented with urea molasses mineral block, 64 (1997) 101

### **Urea-molasses-mineral block**

Rumen fermentation, bacterial and total volatile fatty acid (TVFA) production rates in cattle fed on urea-molasses-mineral block licks supplement, 65 (1997) 275

### **Urea-treated olive cake**

Supplementary feeding value of urea-treated olive cake when fed to growing Awassi lambs, 64 (1997) 287

### **Urea treatment**

Dried lemon as energetic supplement of diet based on urea-treated barley straw: effects on intake and digestibility in goats, 63 (1996) 89

Effect of ammonia and urea treatments on digestibility and nitrogen content of dehydrated lucerne, 67 (1997) 69

### **Urinary allantoin**

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

### **Urinary urea**

The effect of roughage to concentrate ratio in the diet on nitrogen and purine metabolism in dairy cows, 64 (1996) 27

### **UV microspectrophotometry**

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermispora* and *Cyathus stercoreus*, 63 (1996) 305

### **Vegetative phases**

In-situ disappearance and content of *p*-coumaric and ferulic acid in lucerne from various vegetative stages, 67 (1997) 141

### **Vinasse**

Use of cane condensed molasses solubles in feeding broilers, 67 (1997) 253

### **Vitamin E**

Influence of oilseeds in combination with vitamin E supplementation in the diet on backfat quality of pigs, 64 (1997) 91

The effects of dietary  $\alpha$ -tocopherol and oxidised lipid on post-thaw drip from catfish muscle, 65 (1997) 35

**Volatile fatty acids**

Microbiological evaluation of *Acacia angustissima* as a protein supplement for sheep, 65 (1997) 99

Rumen fermentation, bacterial and total volatile fatty acid (TVFA) production rates in cattle fed on urea-molasses-mineral block licks supplement, 65 (1997) 275

**Washing procedure**

Studies on in situ degradation of feeds in the rumen: 2. The effect of bag numbers incubated and post-incubation processing of residues, 68 (1997) 115

**Wheat**

The effect of a wheat-fat-interaction on the efficacy of a multi-enzyme preparation in broiler chickens, 68 (1997) 55

**Wheat grain**

The effect of fertiliser nitrogen on the solubility and rumen degradability of dry matter and nitrogen in wheat grain, 66 (1997) 247

**White-lipped peccary**

Digestive utilization of concentrated and fibrous diets by two peccary species (*Tayassu peccari*, *Tayassu tajacu*) raised in French Guyana, 64 (1997) 215

**White rot fungi**

Biological delignification of plant components by the white rot fungi *Ceriporiopsis subvermispora* and *Cyathus stercoreus*, 63 (1996) 305

**Whit-rot fungi**

Colonization of crop residues by white-rot fungi: cell wall monosaccharides, phenolic acids, ruminal fermentation characteristics and digestibility of cell wall fiber components in vitro, 63 (1996) 273

**Whole barley**

Changes in extract viscosity, amino acid content, and soluble and insoluble  $\beta$ -glucan and dietary fibre content of barley during different high moisture storage conditions, 64 (1997) 257

**Wild ungulates**

Nutritive value of indigenous browse in Africa in relation to the needs of wild ungulates, 69 (1997) 143

**Wilted**

Palatability of wilted and dried multipurpose tree species fed to sheep and goats, 65 (1997) 151

**Winter oats**

The effect of stage of harvest on the process of digestion in cattle fed winter oats indoors. II. Nitrogen digestion and microbial protein synthesis, 63 (1996) 245

**Yeast**

Effect of *Saccharomyces cerevisiae* or *Aspergillus oryzae* cultures and NDF level on parameters of ruminal fermentation, 63 (1996) 289

**Yeast culture**

Effect of fiber source and a yeast culture (*Saccharomyces cerevisiae*<sup>1026</sup>) on digestion and the environment in the rumen of cattle, 64 (1997) 327

**Zinc**

Effect of high dietary zinc concentration and length of zinc feeding on feed intake and tissue zinc concentration in sheep, 66 (1997) 237

Estimation of the relative bioavailability of zinc from inorganic zinc sources for sheep, 66 (1997) 223



